North Carolina Cancer Facts & Figures

2004

American Cancer Society

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NORTH CAROLINA CANCER FACTS AND FIGURES 2004

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INTRODUCTION

North Carolina Cancer Facts and Figures 2004 is provided as a resource for those in North Carolina who are concerned about cancer prevention and detection as well as the cancer treatment and care North Carolinians are receiving. The report discusses current magnitude of the cancer problem in North Carolina with particular attention to selected site-specific cancers and selected populations.

Each site-specific cancer section contains graphs; rates are based on race and age (crude rates). Crude rates are calculated by dividing the number of events (e.g., cancer cases or deaths) by the population. Age-specific cancer rates are the total number of cancer cases that occurred in a specific age group divided by the number of people in that age group. Crude rates can be used to track populations, along with diseases and health issues affecting those populations. For example, in recent years the U.S. census has indicated that the minority population in some states is increasing, the country as a whole is aging, and some states are losing people while others are gaining population. Because cancers affect different age groups in different ways, crude rates should not be used to make comparisons between populations with different age distributions.

Age-adjusted rates make comparison between populations in different regions with various age distributions much easier. To illustrate the differences between age-specific rates and age-adjusted rates, we can compare New Hanover and Wake counties. For 2000, the age-specific female breast cancer rate for New Hanover county was 192.9 per 100,000, while Wake county's rate was 152.0 per 100,000. At first glance, it would appear that the New Hanover's female population is being diagnosed with breast cancer at a much faster rate than women in Wake county. Remember, as a person ages, the risk for most cancers also increases. In 2000, nearly 67% of the female breast cancer cases for New Hanover county were diagnosed in women fifty years and older. For Wake county, the percentage was 42%. When the rates are age-adjusted, New Hanover and Wake county rates are much closer to each other, 174.1 per 100,000 and 178.9 per 100,000, respectively. The female breast cancer rates in both counties are actually quite similar.

This publication also discusses the various cancer control activities and programs within the Division of Public Health of the North Carolina Department of Health and Human Services, the American Cancer Society, North Carolina universities and hospitals, and other national and local organizations. Early detection recommendations and diet and nutritional guidelines from the American Cancer Society are presented.

Unless otherwise indicated, tables and graphs are produced by the North Cancer Central Cancer Registry, rates are expressed per 100,000 standard population, and the 2000 U.S. Census population is the standard population used for age-adjusting. Information used in this publication was gathered from various sources including the American Cancer Society, the National Cancer Institute, the American College of Surgeons' Commission on Cancer, agencies within the Division of Public Health, the universities, hospitals, local and national organizations mentioned, and the North Carolina Central Cancer Registry.

LETTERS
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Michael F. Easley, Governor Carmen Hooker Odom, Secretary

A Message from the Director

Cancer continues to pose a major public health threat to North Carolinians. Estimates indicate that 39,815 citizens of our state will be faced with a new cancer diagnosis in 2004. This number equates to 109 people per day. As in years past, cancer is still the second leading cause of death in our state. We estimate over 16,200 deaths in 2004. Surveillance of this dreaded disease is the cornerstone in providing information for public health and cancer control planning.

This report, *North Carolina Cancer Facts and Figures 2004*, is the result of continued collaboration with the American Cancer Society, Southeast Division. We are pleased to share this publication with them.

For four consecutive years, the North American Association of Central Cancer Registries has certified the North Carolina Central Cancer Registry as a high-quality registry. All standards for certification, including data completeness, timeliness, and quality, were achieved at high levels. Meeting these standards assures that the data are valid and reliable for use in the healthcare and research communities across this state and the nation. The credit for this accomplishment not only goes to the central registry staff, but to the many quality healthcare providers in North Carolina who report cancer data to the registry. The quality of the data starts at the local level.

This report is a product of that spirit of commitment and dedication to excellence demonstrated by the central cancer registry and its partners in the medical community of North Carolina. It is our hope that this report will be a useful tool in cancer control efforts in North Carolina and the United States.

Sincerely,

Leah Devlin
Director
North Carolina Division of Public Health

LETTERS

American Cancer Society-South Atlantic Division Chief Executive Officer

A Message from the American Cancer Society

The North Carolina Cancer Facts and Figures 2004 report represents the first joint Facts and Figures publication by the North Carolina Central Cancer Registry and the American Cancer Society, Southeast Division. This important document contains information on cancer incidence, mortality, screening, prevention and early detection, giving a detailed picture of the impact of cancer in North Carolina.

The American Cancer Society is dedicated to eliminating cancer as a major health problem. To do this, the American Cancer Society has set challenge goals to be achieved by 2015. These goals are to reduce cancer mortality by 50%, to reduce cancer incidence by 25%, and to improve the quality of life for all cancer survivors. These ambitious objectives are interdependent goals, which require public and private collaborative partnerships; and are the shared vision of the American Cancer Society, other public and private health organizations, corporations and community coalitions.

The data in this report will be used as a guide to help us accomplish these goals. Using these data for statewide and local cancer control efforts will enable us to intervene and hopefully prevent cancer from taking more lives in North Carolina. The American Cancer Society offers a variety of free programs and services to the public and cancer patients and their families. Some current programs and services are discussed in this report. For more information on how the American Cancer Society can help you, please call 1-800-ACS-2345 or visit our website www.cancer.org.

The American Cancer Society is proud to have been a part of developing this first ever Facts and Figures publication. The information in this report will help the American Cancer Society and our collaborative partners to meet the needs of North Carolinians.

Sincerely,

Jack Shipkoski
Chief Executive Officer
American Cancer Society
Southeast Division, Inc.

CANCER IN NORTH CAROLINA
Basic Cancer Questions and Answers

What Is Cancer?

Cancer is a group of diseases characterized by uncontrolled growth and spread of abnormal cells. If the spread is not controlled, it can result in death. Cancer is caused by external (chemicals, radiation, and viruses) and internal (hormones, immune conditions, and inherited mutations) factors. Causal factors may act together or in sequence to initiate or promote carcinogenesis. Ten or more years often pass between exposures or mutations and detectable cancer. Cancer is treated with surgery, radiation, chemotherapy, hormones, and immunotherapy.

Can Cancer Be Prevented?

All cancers caused by cigarette smoking and heavy use of alcohol could be prevented. The American Cancer Society (ACS) estimates that in 2004 about 180,000 cancer deaths will be caused by tobacco use.

Scientific evidence suggests that about one-third of the 563,700 cancer deaths expected to occur in 2004 will be related to nutrition, physical activity, and other lifestyle factors and could have been prevented. Certain cancers related to viral infections such as hepatitis B virus (HBV), human papilloma virus (HPV), human immunodeficiency virus (HIV), and helicobacter can be prevented through behavioral changes, vaccines, and antibiotics. In addition, many of the more than one million expected skin cancers in 2004 could have been prevented by protection from the sun's rays.

Regular examinations by a health care professional can result in the early detection of cancers of the breast, colon, rectum, cervix, prostate, testis, oral cavity and skin. Self-examinations of the breast and skin could result in the early detection of tumors. Cancers detected by screening account for about half of all new cancer cases. The five-year relative survival rate for these cancers is nearly 84%. If all of these cancers were diagnosed at a local stage, five-year survival would increase to 95%.

Who Is At Risk Of Developing Cancer?

Anyone. Since the occurrence of cancer increases as an individual ages, most cases affect middle-aged or older adults.

Cancer researchers use the word risk in different ways. *Lifetime risk* refers to the probability that an individual, over the course of a lifetime, will develop cancer or die from it. In the U.S., men have a nearly one-in-two lifetime risk of developing cancer; for women, the risk is slightly more than one in three.

Relative risk is a measure of the strength of the relationship between risk factors and the particular cancer. It compares the risk of developing cancer in persons with a certain exposure or trait to the risk in persons who do not have this exposure or trait. For example, smokers have a ten-fold relative risk of developing lung cancer compared to nonsmokers. This means that smokers are about ten times more likely to develop lung cancer than are nonsmokers. Most relative risks are not this large. For example, women who have a first-degree (mother, sister, or daughter) family history of breast cancer have about a two-fold increased risk of developing breast cancer compared with women who do not have a family history. In other words, women with a first-degree family history are about two times, or 100%, more likely to develop breast cancer than women who do not have a family history of the disease.

How Many People Alive Today Have Ever Had Cancer?

The National Cancer Institute estimates that approximately 9.6 million Americans alive today have a history of cancer. Some of these individuals can be considered cancer-free, while others still have evidence of cancer and may be undergoing treatment.

How Many New Cases Are Expected To Occur This Year?

In 2004, approximately 39,815 North Carolinians – 109 new cases each day – will be diagnosed with cancer. About 1,368,030 people nationwide will be diagnosed with cancer. Since 1990, nearly 18 million new cancer cases have been diagnosed. These estimates do not include carcinoma in situ (noninvasive cancer) of any site except urinary bladder, and

do not include basal and squamous cell skin cancers. For 2004, approximately one million diagnoses of basal and squamous cell skin cancer are expected in the U.S.

How Many People Are Expected To Die Of Cancer?

About 16,275 North Carolinians are expected to die from cancer in 2004. Cancer is the second leading cause of death in the U.S., exceeded only by heart disease. In the U.S., one of every four deaths is from cancer. Since 1990, there have been approximately 5.5 million cancer deaths nationwide. Nationally, cancer will take the lives of an estimated 563,700 Americans in 2004.

What Percentage of People Survive Cancer?

Five-year relative survival rates are commonly used to monitor progress in early detection and treatment of cancer. The *relative survival rate* is the survival rate observed for a group of cancer patients compared to the survival rate for persons in the general population who are similar to the patient group with respect to age, gender, race, and calendar year of observation. Relative survival adjusts for normal life expectancy (factors such as dying of heart disease, accidents, and diseases of old age). Five-year relative survival rates include persons who are living five years after diagnosis – whether in remission, disease-free, or under treatment – and excludes people who have died of other causes.

While these rates provide some indication about the average survival experience of cancer patients in a given population, they are less informative when used to predict individual prognosis and should be interpreted with caution. First, five-year relative survival rates are based on patients who were diagnosed and treated at least five years in the past, so they do not completely reflect the most recent advances in treatment. Second, information about detection methods, treatment protocols, additional illnesses, and behaviors that influence survival are not taken into account in the estimation of survival rates. The five-year relative survival rate for all cancers combined is 63%.

How Is Cancer Staged?

Staging is the process of describing the extent of the disease or the spread of cancer from the site of origin. Staging is essential in determining the choice of therapy and assessing prognosis. A cancer's stage is based on information about the primary tumor's size, its location in the body, and whether or not it has spread to other areas of the body. The *Stage at Diagnosis* section contains a more thorough description about cancer staging (see page 14).

What Are The Costs Of Cancer?

The financial costs of cancer are great both to the individual and to society as a whole. The National Institutes of Health estimate overall annual costs for cancer in 2004 at $189.5 billion: $64.2 billion for direct medical costs (total of all health expenditures), $16.3 billion for indirect morbidity costs (cost of lost productivity due to illness), and $109 billion for indirect mortality costs (cost of lost productivity due to premature death). Treatment of breast, lung, and prostate cancers accounts for over half of the direct medical costs.

About 3% of all U.S. cancer deaths occur in North Carolina. The annual cost of cancer for the state is estimated to be about $5.57 billion: $1.89 billion for direct medical care, $465 million for lost productivity due to illness, and $3.21 billion due to future productivity losses due to premature death.

Insurance status and barriers to health care may affect the cost of treating cancer in this country. According to 2000 National Health Interview Survey data, about 17% of Americans under age 65 had no health insurance. Twenty-seven percent of persons 65 and over had only Medicare coverage. During 1999 and 2000, almost 18% of Americans aged 18 to 64 reported not having a usual source of health care. Also, 6% of adults 18 to 64 years of age say that cost was a barrier to obtaining needed health care in the previous year. In North Carolina, 3.4% of residents have no health insurance. According to the 2002 N.C. Behavior Risk Factor Surveillance System (BRFSS) Survey, of the individuals who needed medical care but did not seek it in the past twelve months, 68.7% said that cost was the main reason.

Lifetime Risk of Being Diagnosed with Cancer by Site, Race and Sex, U.S., 1998-2000

Primary Cancer Site	All Races		Whites		African Americans	
	Males	Females	Males	Females	Males	Females
Oral Cavity and Pharynx	1.40	0.67	1.40	0.69	1.38	0.50
Esophagus	0.75	0.26	0.77	0.25	0.77	0.38
Stomach	1.25	0.79	1.09	0.66	1.32	1.03
Colon and Rectum	5.97	5.66	6.03	5.66	4.94	5.38
Liver	0.86	0.42	0.72	0.35	0.80	0.36
Pancreas	1.23	1.24	1.23	1.22	1.27	1.34
Larynx	0.65	0.16	0.65	0.17	0.86	0.23
Lung and Bronchus	7.75	5.79	7.75	6.08	8.29	5.37
Malignant Melanoma (Skin)	1.83	1.23	2.16	1.48	0.10	0.08
Breast	0.11	13.51	0.12	14.28	0.14	10.14
Uterine Cervix	**	0.79	**	0.75	**	0.97
Uterine Corpus (Endometrium)	**	2.62	**	2.82	**	1.69
Ovary	**	1.72	**	1.85	**	1.10
Prostate	17.28	**	16.90	**	20.40	**
Testis	0.35	**	0.42	**	0.10	**
Urinary Bladder	3.52	1.13	3.91	1.22	1.42	0.78
Kidney	1.46	0.87	1.53	0.91	1.23	0.86
Multiple Myeloma	0.66	0.54	0.65	0.49	0.89	0.93
Brain, Central Nervous System	0.66	0.53	0.75	0.59	0.32	0.30
Leukemia	1.45	1.03	1.55	1.09	0.89	0.74
Hodgkin's Disease	0.23	0.20	0.26	0.22	0.19	0.15
Non-Hodgkin's Lymphoma	2.12	1.79	2.26	1.91	1.17	1.04
All Cancers	45.19	38.67	45.40	39.99	42.45	32.09

Lifetime risk rates are expressed as percents.
** Statistics could not be calculated.
SEER (Surveillance, Epidemiology, and End Results) 12 areas.
Source: Cancer Statistics Branch, National Cancer Institute

Lifetime Risk of Dying from Cancer by Site, Race and Sex, U.S., 1998-2000

Primary Cancer Site	All Races		Whites		African Americans	
	Males	Females	Males	Females	Males	Females
Oral Cavity and Pharynx	0.39	0.20	0.37	0.20	0.54	0.19
Esophagus	0.71	0.23	0.71	0.21	0.84	0.32
Stomach	0.61	0.41	0.56	0.37	0.92	0.69
Colon and Rectum	2.39	2.30	2.40	2.28	2.39	2.56
Liver	0.61	0.36	0.57	0.34	0.67	0.37
Pancreas	1.15	1.16	1.15	1.15	1.14	1.33
Larynx	0.24	0.06	0.22	0.06	0.39	0.09
Lung and Bronchus	7.35	4.81	7.41	4.99	7.40	3.93
Malignant Melanoma (Skin)	0.35	0.19	0.40	0.22	0.04	0.05
Breast	0.03	3.12	0.03	3.12	0.04	3.39
Uterine Cervix	**	0.27	**	0.24	**	0.50
Uterine Corpus (Endometrium)	**	0.50	**	0.48	**	0.72
Ovary	**	1.02	**	1.07	**	0.72
Prostate	3.05	**	2.86	**	4.72	**
Testis	0.02	**	0.02	**	0.01	**
Urinary Bladder	0.73	0.31	0.78	0.32	0.38	0.32
Kidney	0.56	0.33	0.58	0.35	0.44	0.27
Multiple Myeloma	0.44	0.40	0.43	0.37	0.63	0.69
Brain, Central Nervous System	0.49	0.40	0.54	0.43	0.23	0.21
Leukemia	0.94	0.72	0.99	0.75	0.62	0.54
Hodgkin's Disease	0.05	0.04	0.05	0.04	0.04	0.03
Non-Hodgkin's Lymphoma	0.96	0.85	1.03	0.91	0.50	0.44
All Cancers	23.60	19.99	23.66	20.22	24.23	19.47

Lifetime risk rates are expressed as percents.
** Statistics could not be calculated.
SEER (Surveillance, Epidemiology, and End Results) 12 areas.
Source: Cancer Statistics Branch, National Cancer Institute

Five-Year Relative Survival Rates by Site, Race and Gender, U.S., 1992-1998

Primary Cancer Site	Whites			African Americans		
	Total	Males	Females	Total	Males	Females
Oral Cavity and Pharynx	58.8	57.8	60.9	34.9	29.5	49.3
Esophagus	14.7	14.7	14.8	8.3	9.0	6.7
Stomach	20.9	19.5	23.4	20.0	19.2	21.1
Colon and Rectum	62.6	62.6	62.7	52.8	52.7	52.8
Liver	6.5	5.9	7.8	4.0	3.1	6.2
Gallbladder	14.9	12.9	15.4	11.5	11.3	11.6
Pancreas	4.3	4.3	4.4	3.9	4.2	3.7
Larynx	65.9	67.7	59.2	54.1	54.3	54.0
Lung and Bronchus	15.0	13.3	17.0	12.3	10.8	14.7
Bone	70.4	69.3	71.9	65.4	61.1	69.8
Soft Tissue including Heart	67.8	68.4	67.2	64.3	63.1	65.6
Malignant Melanoma (Skin)	89.3	87.1	91.8	65.5	69.4	61.9
Breast	87.5	86.2	87.6	72.4	60.0	72.5
Uterine Cervix	72.1	**	72.1	59.9	**	59.9
Uterine Corpus (Endometrium)	86.8	**	86.8	62.2	**	62.2
Ovary	52.5	**	52.5	52.5	**	52.5
Prostate	97.8	97.8	**	92.6	92.6	**
Testis	95.7	97.8	**	84.7	84.7	**
Urinary Bladder	82.3	84.4	76.4	64.5	69.4	55.7
Kidney	62.4	62.8	61.8	60.0	58.1	62.5
Endocrine	92.7	87.9	94.6	88.1	79.8	90.8
Lymphoma	60.7	57.5	64.7	52.5	47.1	60.5
Multiple Myeloma	29.5	30.9	28.0	32.5	34.2	31.2
Leukemia	47.3	48.4	45.7	38.4	37.9	39.0
Brain, Central Nervous System	31.5	31.8	31.0	39.9	43.5	36.3
Hodgkin's Disease	84.7	82.8	86.9	77.0	73.9	80.1
Non-Hodgkin's Lymphoma	56.1	52.7	60.2	46.1	41.4	53.8
Other Cancers	14.1	16.4	21.1	11.1	10.6	11.5
All Cancers	63.8	63.5	64.2	52.6	54.0	51.0

Survival rates are expressed as percents. SEER (Surveillance, Epidemiology, and End Results) 9 areas.

** Statistics could not be calculated.

Source of table: Cancer Statistics Branch, National Cancer Institute

Trends in Five-Year Relative Survival Rates* by Race and Year of Diagnosis, US, 1974-1998

Primary Cancer Site	White			African American			All Races		
	Relative 5-Year Survival Rate (%)			Relative 5-Year Survival Rate (%)			Relative 5-Year Survival Rate (%)		
	1974-76	1983-85	1992-98	1974-76	1983-85	1992-98	1974-76	1983-85	1992-98
Brain	22	26	32^	27	32	40^	22	27	32^
Colon	51	58	62^	46	49	53^	50	58	62^
Esophagus	5	9	15^	4	6	8^	5	8	14^
Female Breast	75	79	88^	63	63	73^	75	78	86^
Hodgkin's Disease	72	79	84^	69	78	77^	71	79	84^
Kidney	52	56	62^	49	55	60^	52	56	62^
Larynx	66	69	66	60	55	54	66	67	64
Leukemia	35	42	46^	31	33	38	34	41	46^
Liver	4	6	6^	1	4	4^	4	6	7^
Lung and Bronchus	13	14	15^	12	11	12^	12	14	15^
Malignant Melanoma (Skin)	80	85	89^	67^^	74**	66^^	80	85	89^
Multiple Myeloma	24	27	28^	27	31	33	24	28	30^
Non-Hodgkin's Lymphoma	48	54	54^	49	45	46^	47	54	55^
Oral Cavity	55	55	58^	36	35	35	53	53	56^
Ovary	37	40	52^	41	41	53^	37	41	53^
Pancreas	3	3	4^	3	5	4	3	3	4^
Prostate	68	76	97^	58	64	93^	67	75	97^
Rectum	49	56	62^	42	44	53^	49	55	62^
Stomach	15	16	21^	17	19	20	15	17	22^
Testis	79	91	95^	76^^	88^^	85	79	91	95^
Thyroid	92	93	95^	88	92	93	92	93	96^
Urinary Bladder	74	78	82^	48	59	65^	73	78	82^
Uterine Cervix	70	71	72^	64	60	60	69	69	71^
Uterine Corpus (Endometrium)	89	85	86^	61	54	61	88	83	84^
All Cancer	51	54	64^	39	40	53^	50	52	62^

* Rates are adjusted for normal life expectancy and are based on cases diagnosed from 1975-76, 1983-85, and in 1992-1998, and followed through 1999.

^ The difference in rates between 1974-76 and 1992-98 is statistically significant ($p<0.05$).

^^ The standard error of the survival rate is between 5 and 10 percentage points.

** The standard error of the survival rate is greater than 10 percentage points.

Source: Surveillance, Epidemiology, and End Results, 1973-1999, National Cancer Institute, American Cancer Society-Cancer Facts and Figures 2003

2000 Cancer Cases and 2001 Deaths for Selected Sites by Sex, North Carolina

Primary Cancer Site	*Cases-2000*			*Deaths-2001*		
	Total	Male	Female	Total	Male	Female
Lip, Oral Cavity, Pharynx	**812**	**556**	**256**	**199**	**122**	**77**
Tongue	179	118	61	52	28	24
Salivary Glands	86	47	39	21	13	8
Pharynx	143	112	31	72	49	23
Other Parts of Mouth	380	260	120	54	32	22
Digestive Organs, Peritoneum	**5,885**	**3,096**	**2,789**	**3,567**	**1,850**	**1,717**
Esophagus	347	251	96	324	231	93
Stomach	442	256	186	332	172	160
Small Intestine	109	52	57	27	13	14
Colon and Rectum	3,808	1,927	1,881	1,532	742	790
Liver and Bile Ducts	250	168	82	327	214	113
Pancreas	649	342	307	857	420	437
Gallbladder	63	16	47	45	11	34
Other, Ill-defined sites	217	84	133	123	47	76
Respiratory System	**5,684**	**3,488**	**2,196**	**5,031**	**3,130**	**1,901**
Larynx	354	289	65	111	94	17
Lung and Bronchus	5,235	3,138	2,097	4,895	3,020	1,875
Other	95	61	34	25	16	9
Bones and Joints	**62**	**38**	**24**	**33**	**15**	**18**
Soft Tissue including Heart	**205**	**108**	**97**	**106**	**55**	**51**
Malignant Melanoma (Skin)	**1,190**	**653**	**537**	**241**	**144**	**97**
Breast	**6,568**	**49**	**6,519**	**1,171**	**17**	**1,154**
Genital Organs	**7,326**	**5,326**	**2,000**	**1,686**	**939**	**747**
Uterine Cervix	372	0	372	125	0	125
Uterine Corpus (Endometrium)	829	0	829	103	0	103
Ovary	660	0	660	382	0	382
Other Female Genital	139	0	139	137	0	137
Prostate	5,095	5,095	0	913	913	0
Testis	190	190	0	13	13	0
Other Male Genital	41	41	0	13	13	0
Urinary Organs	**2,357**	**1,633**	**724**	**682**	**447**	**235**
Urinary Bladder	1,343	983	360	285	190	95
Kidney and Renal Pelvis	966	620	346	378	246	132
Other Urinary Organs	48	30	18	19	11	8
Eye and Orbit	**47**	**26**	**21**	**4**	**1**	**3**
Brain, Central Nervous System	**482**	**254**	**228**	**345**	**180**	**165**
Endocrine Glands	**431**	**122**	**309**	**53**	**31**	**22**
Thyroid Gland	389	103	286	30	17	13
Other Endocrine (includes Thymus)	42	19	23	23	14	9
Leukemia	**683**	**406**	**277**	**583**	**311**	**272**
Lymphocytic Leukemia	265	169	96	183	107	76
Myeloid (Granulocytic) & Monocytic	343	196	147	295	148	147
Other Leukemia	75	41	34	105	56	49
Lymphomas	**1,326**	**691**	**635**	**641**	**338**	**303**
Hodgkin's Disease	186	92	94	32	14	18
Non-Hodgkin's Lymphoma	1,140	599	541	609	324	285
Multiple Myeloma	**381**	**199**	**182**	**349**	**164**	**185**
Other Cancers	**878**	**458**	**420**	**1,356**	**739**	**617**
All Cancers	**34,317**	**17,103**	**17,214**	**16,047**	**8,483**	**7,564**

Projected New Cancer Cases and Deaths for Selected Sites by Sex, North Carolina, 2004

Primary Cancer Site	Projected New Cases			Projected Deaths		
	Total	Male	Female	Total	Male	Female
Lip, Oral Cavity, Pharynx	**875**	**615**	**260**	**240**	**160**	**80**
Tongue	220	150	70	55	35	20
Salivary Glands	95	55	40	25	15	10
Pharynx	230	190	40	70	50	20
Other Parts of Mouth	330	220	110	90	60	30
Digestive Organs, Peritoneum	**7,365**	**3,860**	**3,505**	**3,850**	**2,050**	**1,800**
Esophagus	385	285	100	355	270	85
Stomach	675	410	265	385	225	160
Small Intestine	140	70	70	35	20	15
Colon and Rectum	4,435	2,210	2,225	1,695	835	860
Liver and Bile Ducts	430	290	140	370	230	140
Pancreas	900	440	460	845	410	435
Other, Ill-defined sites	400	155	245	165	60	105
Respiratory System	**5,765**	**3,285**	**2,480**	**4,740**	**2,815**	**1,925**
Larynx	330	260	70	115	90	25
Lung and Bronchus	5,315	2,935	2,380	4,595	2,705	1,890
Other	120	90	30	30	20	10
Bones and Joints	**60**	**35**	**25**	**35**	**20**	**15**
Soft Tissue including Heart	**235**	**125**	**110**	**120**	**60**	**60**
Malignant Melanoma (Skin)	**1,445**	**805**	**640**	**220**	**135**	**85**
Breast	**6,805**	**45**	**6,760**	**1,290**	**10**	**1,280**
Genital Organs	**9,010**	**6,330**	**2,680**	**1,730**	**945**	**785**
Uterine Cervix	380	0	380	135	0	135
Uterine Corpus (Endometrium)	1,150	0	1,150	195	0	195
Ovary	765	0	765	410	0	410
Other Female Genital	385	0	385	45	0	45
Prostate	6,050	6,050	0	925	925	0
Testis	225	225	0	10	10	0
Other Male Genital	55	55	0	10	10	0
Urinary Organs	**2,710**	**1,880**	**830**	**705**	**450**	**255**
Urinary Bladder	1,690	1,240	450	345	230	115
Kidney and Renal Pelvis	930	570	360	340	210	130
Other Urinary Organs	90	70	20	20	10	10
Eye and Orbit	**70**	**40**	**30**	**10**	**5**	**5**
Brain, Central Nervous System	**545**	**305**	**240**	**375**	**205**	**170**
Endocrine Glands	**615**	**160**	**455**	**65**	**30**	**35**
Thyroid Gland	585	145	440	35	15	20
Other Endocrine (includes Thymus)	35	15	20	30	15	15
Leukemia	**975**	**550**	**425**	**605**	**330**	**275**
Lymphocytic Leukemia	450	265	185	175	100	75
Myeloid (Granulocytic) & Monocytic	465	255	210	280	150	130
Other Leukemia	60	30	30	150	80	70
Lymphomas	**1,800**	**970**	**830**	**730**	**380**	**350**
Hodgkin's Disease	230	125	105	45	25	20
Non-Hodgkin's Lymphoma	1,570	845	725	685	355	330
Multiple Myeloma	**455**	**240**	**215**	**305**	**155**	**150**
Other Cancers	**1,085**	**555**	**530**	**1,255**	**650**	**605**
All Cancers	**39,815**	**19,800**	**20,015**	**16,275**	**8,400**	**7,875**

Projected New Cancer Cases and Deaths for Selected Sites by County, 2004

County	*Projected New Cases*					*Projected Deaths*				
	Total	Lung	Female Breast	Prostate	Colon/ Rectum	Total	Lung	Female Breast	Prostate	Colon/ Rectum
Alamance	695	95	120	105	80	295	80	25	20	30
Alexander	175	20	30	25	20	70	20	5	5	5
Alleghany	80	10	10	10	10	30	10	0	0	5
Anson	140	20	20	20	15	55	15	5	5	5
Ashe	165	20	25	25	20	70	20	5	5	10
Avery	110	15	15	15	10	45	15	5	5	5
Beaufort	275	40	45	45	30	115	30	10	5	10
Bertie	120	15	20	15	15	50	15	5	5	5
Bladen	180	25	30	25	20	75	20	5	5	10
Brunswick	520	75	80	95	60	215	65	15	15	20
Buncombe	1,190	165	200	185	140	510	140	40	30	55
Burke	465	65	80	75	55	195	55	15	10	20
Cabarrus	640	85	110	100	70	260	75	20	15	25
Caldwell	420	55	70	65	45	170	50	15	10	20
Camden	45	5	5	5	5	15	5	0	0	0
Carteret	400	55	65	70	45	165	50	10	10	15
Caswell	130	15	20	20	15	50	15	5	5	5
Catawba	715	95	120	110	80	295	85	25	15	30
Chatham	300	40	50	45	35	125	35	10	10	15
Cherokee	185	25	30	30	20	75	25	5	5	10
Chowan	95	15	15	15	10	40	10	5	0	5
Clay	75	10	10	15	10	30	10	0	0	5
Cleveland	505	70	85	75	55	210	60	15	10	20
Columbus	290	40	50	45	35	120	35	10	10	15
Craven	470	65	75	75	55	195	55	15	10	20
Cumberland	1,070	140	190	155	110	415	115	35	20	40
Currituck	105	15	15	15	10	40	10	5	0	5
Dare	190	25	30	30	20	75	20	5	5	10
Davidson	770	105	130	120	85	320	90	25	20	35
Davie	200	25	35	30	25	85	25	5	5	10
Duplin	250	35	40	35	25	100	30	10	5	10
Durham	930	120	170	130	100	380	105	30	20	40
Edgecombe	275	35	50	40	30	110	30	10	5	10
Forsyth	1,535	205	270	230	175	635	180	50	35	65
Franklin	230	30	40	35	25	90	25	10	5	10
Gaston	950	130	165	145	105	390	110	30	20	40
Gates	65	10	10	10	5	25	5	0	0	0
Graham	60	5	10	10	5	25	5	0	0	0
Granville	240	30	40	35	30	100	30	10	5	10
Greene	95	15	15	15	10	40	10	5	0	5
Guilford	1,980	265	345	295	225	820	230	65	45	85
Halifax	315	45	55	45	35	130	35	10	10	15
Harnett	400	55	70	60	45	160	45	15	10	15
Haywood	375	50	60	60	45	160	45	10	10	20
Henderson	665	95	105	110	80	295	80	20	20	30
Hertford	140	20	25	20	15	55	15	5	5	5
Hoke	125	15	20	20	15	45	15	5	0	5
Hyde	40	5	5	5	5	15	5	0	0	0
Iredell	635	85	105	100	70	260	75	20	15	30
Jackson	190	25	30	30	20	75	20	5	5	10
Johnston	550	70	95	80	60	215	60	20	10	20

Projected New Cancer Cases and Deaths for Selected Sites by County, 2004 (continued)

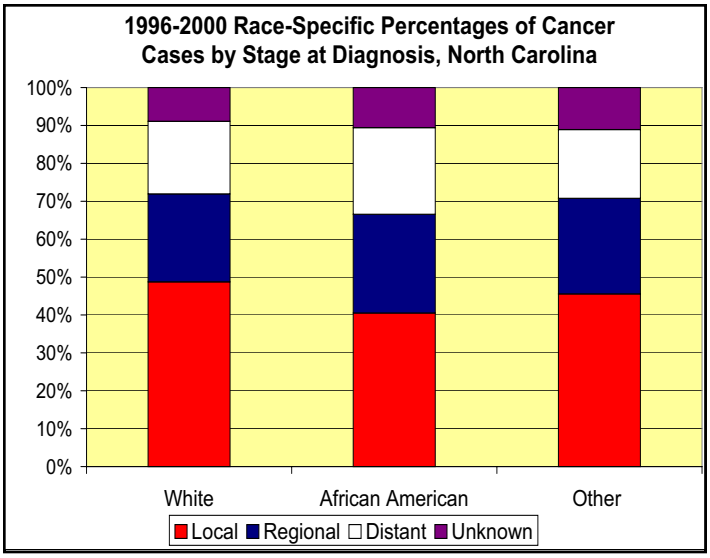
County	*Projected New Cases*					*Projected Deaths*				
	Total	Lung	Female Breast	Prostate	Colon/ Rectum	Total	Lung	Female Breast	Prostate	Colon/ Rectum
Jones	65	10	10	10	5	25	5	0	0	0
Lee	250	35	40	40	30	100	30	10	5	10
Lenoir	330	45	55	50	40	135	40	10	10	15
Lincoln	320	45	55	50	35	130	35	10	10	15
Mcdowell	240	30	40	40	30	100	30	5	5	10
Macon	235	30	35	40	30	105	30	5	5	10
Madison	125	15	20	20	15	50	15	5	5	5
Martin	145	20	25	20	15	60	15	5	5	5
Mecklenburg	2,760	355	500	390	300	1,095	305	90	55	110
Mitchell	110	15	15	15	10	45	15	5	5	5
Montgomery	150	20	25	25	15	60	15	5	5	5
Moore	550	80	85	95	65	245	70	15	15	25
Nash	435	60	75	65	50	180	50	15	10	20
New Hanover	835	115	140	130	95	345	100	25	20	35
Northampton	140	20	25	20	15	60	15	5	5	5
Onslow	455	60	80	70	45	175	50	15	10	15
Orange	460	60	80	70	50	185	50	15	10	20
Pamlico	95	10	15	15	10	35	10	5	0	5
Pasquotank	185	25	30	30	20	80	20	5	5	10
Pender	240	35	40	40	25	100	30	5	5	10
Perquimans	85	10	15	15	10	35	10	5	0	5
Person	195	25	35	30	20	80	20	5	5	10
Pitt	545	70	100	80	60	220	60	20	10	25
Polk	150	20	20	25	20	65	20	5	5	10
Randolph	650	90	110	100	75	265	75	20	15	30
Richmond	245	35	40	35	25	100	30	10	5	10
Robeson	520	70	90	75	55	210	60	20	10	20
Rockingham	520	70	85	80	60	220	60	15	15	25
Rowan	685	95	110	105	80	290	80	20	20	30
Rutherford	370	50	60	60	45	155	45	10	10	15
Sampson	300	40	50	45	35	125	35	10	10	15
Scotland	170	20	30	25	20	70	20	5	5	5
Stanly	315	45	50	50	35	130	35	10	10	15
Stokes	230	30	40	35	25	90	25	5	5	10
Surry	415	55	65	65	45	175	50	15	10	20
Swain	80	10	15	10	10	35	10	0	0	5
Transylvania	225	30	35	40	25	95	30	5	5	10
Tyrrell	30	5	5	5	5	10	5	0	0	0
Union	555	75	95	85	60	220	60	20	10	20
Vance	220	30	40	30	25	90	25	5	5	10
Wake	2,400	300	440	340	250	925	260	80	45	95
Warren	125	15	20	20	15	50	15	5	5	5
Washington	85	10	15	15	10	35	10	5	0	5
Watauga	195	25	30	30	20	80	25	5	5	10
Wayne	530	70	90	80	60	215	60	15	10	20
Wilkes	375	50	60	60	40	155	45	10	10	15
Wilson	380	50	65	55	40	155	45	15	10	15
Yadkin	205	25	35	30	20	85	25	5	5	10
Yancey	125	15	20	20	15	50	15	5	5	5
North Carolina	**39,815**	**5,315**	**6,760**	**6,050**	**4,435**	**16,275**	**4,595**	**1,280**	**925**	**1,695**

STAGE AT DIAGNOSIS

The cells of the body reproduce in an orderly manner so that worn-out tissues are replaced, injuries are repaired, and necessary growth continues. Sometimes individual cells change, and as a result, their reproduction may become abnormal or uncontrolled. These cells can grow into tumors and spread through the body's fluids to other tissues. Tumors can be benign or malignant (cancerous).

Staging is the process of describing the extent or spread of the disease from the site of origin. A number of different staging systems are currently being used to classify tumors. The *TNM staging system* assesses tumors in three ways: the extent of the primary tumor (T), the absence or presence of regional lymph node involvement (N), and the absence or presence of distant metastases (M). Once the T, N, and M are determined, a "stage" of I, II, III, or IV is assigned. Summary staging (*in situ* and *invasive - local*, *regional*, and *distant*) has been useful for descriptive and statistical analysis of tumor registry data.

Cancer is dangerous because it can invade and destroy normal tissue. Typically, when a cancerous growth begins, the abnormal cells remain at the site (tissue or organ) where they originated. This early stage is termed *in situ*. Next, the cancer cells could infiltrate the tissue or organ. At this point a mass of cells (a tumor) is formed. The cancer has become *localized*. After invading the tissue or organ, the cancerous cells spread to adjacent tissues or to nearby lymph nodes (tiny drainage filters for dying cells and wastes). This stage is called *regional*. Eventually, cancerous cells will disperse throughout the body via the circulatory system. At this level of growth, the cancer is a *distant* disease; such an advanced cancer may rapidly threaten one's life.



The stage of cancer at the time of diagnosis is a very important factor in determining the treatment method and the potential for cure. A characteristic of some cancers is that abnormal cells spread rapidly; hence, the potential is greater for these cancers to be life threatening. Lung, oral, pancreas, esophagus, ovary, melanoma, and brain cancers can quickly reach the distant stage. For these cancers, the greatest hope is to prevent the disease by avoiding the risk factors when they are known (e.g., cigarette smoking, exposure to harmful sunlight), and by living a more healthy lifestyle.

African Americans and persons of other races often (or, "as a group") have later stages of cancer at the time of diagnosis. This contributes to these racial groups having higher cancer mortality rates and indicates the need to emphasize early detection and screening programs among these populations. The table above shows the variation in stage at the time of diagnosis by race for North Carolinians between 1996 and 2000.

Five-Year Relative Survival Rates^ by Stage at Diagnosis, 1992-1998

Primary Cancer Site	All Stages	Local	Regional	Distant
Colon and Rectum	62	90	65	9
Esophagus	13	27	13	2
Female Breast	86	97	78	23
Kidney	62	90	60	9
Larynx	64	82	51	38
Liver	7	15	6	2
Lung and Bronchus	15	49	22	3
Malignant Melanoma (Skin)	89	96	60	14
Oral Cavity	56	82	47	23
Ovary	53	95	81	31
Pancreas^^	4	17	7	1
Prostate	97	100	^^	34
Stomach	22	59	22	2
Testis	95	99	95	74
Thyroid	96	99	95	44
Urinary Bladder	82	94	48	6
Uterine Cervix	71	92	51	15
Uterine Corpus (Endometrium)	84	96	64	26

Survival rates are expressed as percents.

^ Rates are adjusted for normal life expectancy and are based on cases diagnosed from 1992-1998, followed through 1999.

^^ The rate for local stage repesents local and regional stages combined.

Source: Surveillance, Epidemiology, and End Results, 1973-1999, National Cancer Institute

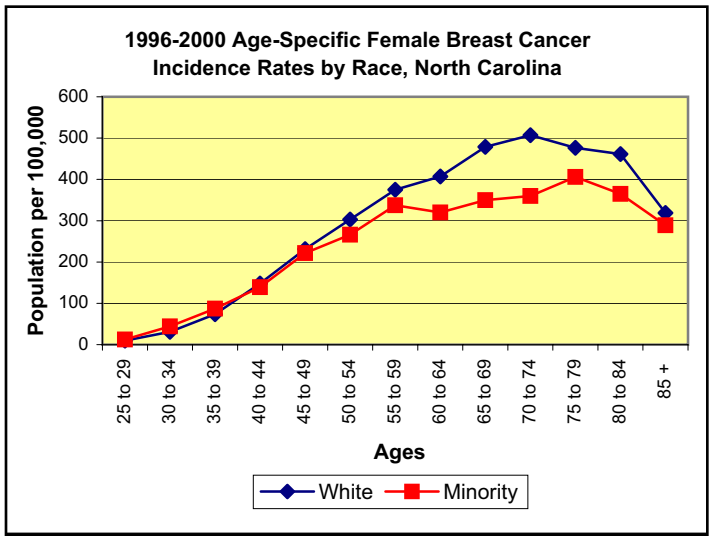
SELECTED CANCERS

Breast

Breast cancer is 100 more times likely to occur in women than men.

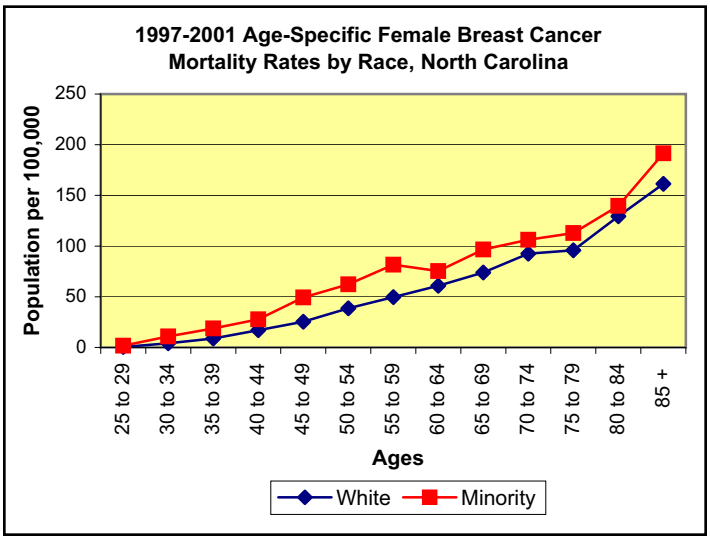
Incidence: Approximately 6,760 women in North Carolina will be diagnosed with breast cancer in 2004. Roughly one in eight women will develop breast cancer sometime during her life (based on 100 years of life expectancy). About 45 of North Carolina's men, 1,450 nationwide, will be diagnosed with breast cancer. The average rate of increase for North Carolina women in the 1990's was about 4.5%. Nationally, an estimated 215,990 new cases of invasive breast cancer will occur among women in 2004. In addition to invasive breast cancer, 59,390 new cases of in situ breast cancer are expected to occur among U.S. women in 2004. Eighty-five percent of these cases will be ductal carcinoma in situ (DCIS). The increase in DCIS cases over the past 10 years is a direct result of the increase use of mammography, which detects invasive cancers before they can be felt.

Mortality: An estimated 1,280 North Carolina women will die in 2004 from breast cancer, the second major cause of cancer death among women. According to the most recent data, U.S. mortality rates among women declined 2.3% each year from 1990-2000, with the largest decreases in younger women, both white and African American, under 50 years old. These decreases are probably the result of earlier detection and improved treatment.



Warning Signals: When changes in the breast grow to a point where physical signs and symptoms exist, a doctor should be seen. Symptoms may include: a lump, thickening, dimpling, swelling, or tenderness of the breast; skin irritation; nipple pain, retraction, scaliness, or ulceration.

Risk Factors: Breast cancer risk increases with age, with women over the age of 50 being more at risk. The risk is also higher for women with a personal or family history of breast, ovarian, or endometrial cancer and biopsy-confirmed atypical hyperplasia. The inherited susceptibility genes BRCA1 and BRCA2 account for 5% of all cases. However, general screening for mutations of these genes is not recommended. Increased risk for breast cancer has been associated with first full-term pregnancy after age thirty, a long menstrual history (menstrual periods that begin early and end late in life), and recent use of oral contraceptives or post-menopausal estrogens and progestins. Obesity, consuming two or more alcoholic beverages daily, and a high-fat diet have been suggested as possible risk factors for breast cancer. Vigorous physical activity and maintaining a healthy body weight are associated with lower risk.



Prevention: Unfortunately, there is no way to prevent breast cancer. For now, the best way to reduce one's risk is to manage modifiable risk factors such as one's weight, alcohol and estrogen use. The use of anti-estrogen drugs, like tamoxifen, reduces the risk of breast cancer in women at increased risk. Preliminary data suggest raloxifene,

another estrogen-receptor modulator, is also helpful for women at increased risk. Recent studies also show that preventative surgery to remove the ovaries and fallopian tubes in premenopausal BRCA1 and BRCA2 carriers reduces the risk of breast cancer. Following the American Cancer Society (ACS) guidelines for early detection of breast cancer will not prevent the disease, but the likelihood for successful treatment and recovery is at its greatest when the cancer is caught early.

Early Detection: Mammography is extremely valuable in early detection because it can identify breast abnormalities that may be cancer at an early stage, before physical symptoms develop. Studies have shown that early detection saves lives and increases treatment options. The declines in breast cancer mortality rates are largely attributed to regular mammogram screenings. According to the 2002 Behavior Risk Factor Surveillance System (BRFSS) Survey, 81.2% of women in North Carolina aged 40 and older received a mammogram within the past two years.

The ACS recommends:

- yearly mamograms starting at age 40 and continuing for as long as a woman is in good health;
- clinical breast exams (CBE) should be part of a periodic health exam, about every three years for women in their 20s and 30s and every year for women 40 and over;
- women should report any breast change promptly to their health care providers. Breast self-exam (BSE) is an option for women starting in their 20s; and
- women at increased risk (e.g., family history, genetic tendency, past breast cancer) should talk with their doctors about the benefits and limitations of starting mammography screening earlier, having additional tests (e.g., breast ultrasound or MRI), or having more frequent exams.

Besides its effectiveness in screening asymptomatic women, mammography is recognized as a valuable diagnostic technique for women who have findings suggestive of breast cancer. Once a breast lump is found, mammography can help determine if other lesions exist in the same or opposite breast that are too small to be felt. A biopsy should be performed on suspicious lumps for a definitive diagnosis, even when the mammography findings are described as normal.

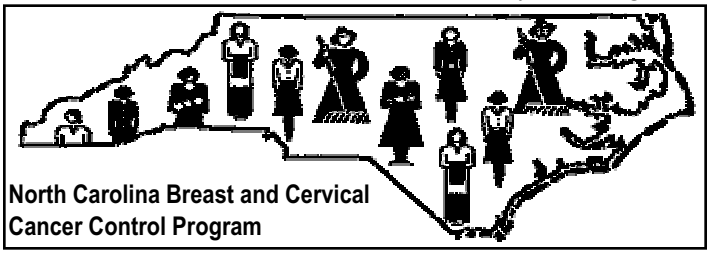
Treatment: Taking into account the medical situation and the patient's preferences, treatment options may include lumpectomy (local removal of tumor) and removal of lymph nodes under the arm; mastectomy (surgical removal of the breast) and removal of lymph nodes under the arm; radiation therapy; chemotherapy or hormone therapy. Often, two or more methods are used in combination. Studies have shown that, for early-stage disease, long-term survival rates after lumpectomy plus radiotherapy are similar to survival rates after modified radical mastectomy. Treatment of DCIS includes local excision, radiation, and/or tamoxifen. Patients should discuss with their physicians possible options for the best management of their breast cancer. New techniques in recent years have made breast reconstruction possible after mastectomy, and the cosmetic results have significantly improved.

Survival: Nationally, the five-year survival rate for localized (early stage) breast cancer has risen from 72% in the 1940s to 97% today. If the breast cancer is in situ (non-invasive), the survival rate approaches 100%. For cancer that has spread regionally, the survival rate is 79%; for women with distant metastases, the survival rate is 23%. Based on North Carolina data from 1996-2000, approximately 65% of breast cancers were diagnosed at the local or in situ stages.

Breast Cancer Control Activities

Research programs and activities to control and reduce the incidence and mortality of breast cancer abound in North Carolina.

In 1992, federal funds were set aside to form the Breast and Cervical Cancer Control Program (BCCCP), a comprehensive program focused on the early detection of breast and cervical cancers. BCCCP focuses on women 50 to 64 years of age,



especially ethnic minorities, who are at or below 200% of the federal poverty level and not enrolled in Medicare B. BCCCP collaborates with local health departments to ensure these at-risk women and all women get the necessary screening tests and follow-up services.

Two regions in North Carolina are part of the Women's Health Initiative (WHI) to study the major causes of death, disability, and frailty in postmenopausal women. The goal of the WHI is to reduce coronary heart disease, breast and colorectal cancers, and osteoporotic fractures among postmenopausal women via prevention strategies and risk factor identification. This 15-year multi-million dollar endeavor began in 1991, with recruitment beginning in September 1993. Nationally, 167,000 women between the ages of 50 and 79 participate in the program. Forty WHI centers are in the U.S.; a regional clinical coordinating center is located at the Bowman Gray School of Medicine at Wake Forest University in Winston-Salem and a clinical center is housed at the University of North Carolina at Chapel Hill (UNC-CH).

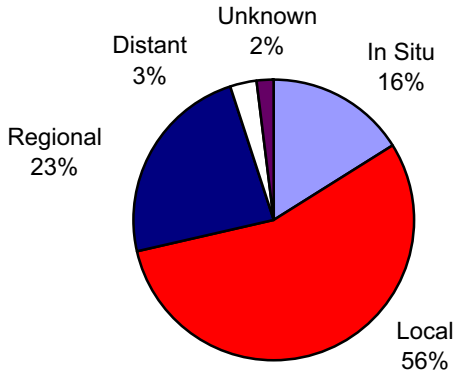
Based at UNC-CH's Lineberger Comprehensive Cancer Center is the North Carolina Breast Cancer Screening Program (NC-BCSP). This program is dedicated to reducing late-stage diagnoses of breast and cervical cancers in older African American women living in rural eastern North Carolina. By increasing mammography and pap testing rates among African American women, NC-BCSP believes that the quality and length of life for these at-risk women will improve.

The Study of Raloxifene and Tamoxifen (STAR) is currently in progress at the Lineberger Comprehensive Cancer Center. STAR began enrolling postmenopausal women at increased risk of breast cancer in July 1999. STAR is designed to determine whether the osteoporosis prevention and treatment drug raloxifene (Evista) is as effective as tamoxifen (Nolvadex) in reducing breast cancer risk. STAR is a study of the National Surgical Adjuvant Breast and Bowel Project and is supported by the National Cancer Institute (NCI).

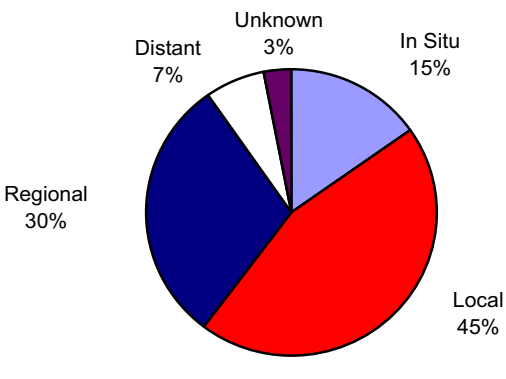
Since the 1970s, breast cancer research has been a prime focus of the Comprehensive Cancer Center at Wake Forest University. The Breast Center of Excellence, formerly the Breast Cancer Program, strives to provide a comprehensive attack on the breast cancer problem using a multidisciplinary approach involving basic scientists, public health scientists and clinicians. Several studies in the area of breast cancer control are currently underway. A study evaluating the breast cancer screening methods and compliance in the tri-racial, rural population of Western North Carolina was just completed.

With funds from the Department of Defense in 1994 and continued funding from the National Cancer Institute (NCI) since 1995, the Carolina Mammography Registry operates through the Radiology Department of UNC-CH. The Registry evaluates the practice of and outcomes from breast cancer screening mammography at the community level. By the end of 1999, nearly 400,000 records from 85 facilities in 39 counties were in the Registry's database.

1996-2000 Percentage of White Female Breast Cancer Cases at Stage of Diagnosis, North Carolina



1996-2000 Percentage of Minority Female Breast Cancer Cases at Stage of Diagnosis, North Carolina



Building mammography and breast cancer registries for women in the Native American communities is a goal of the Registry.

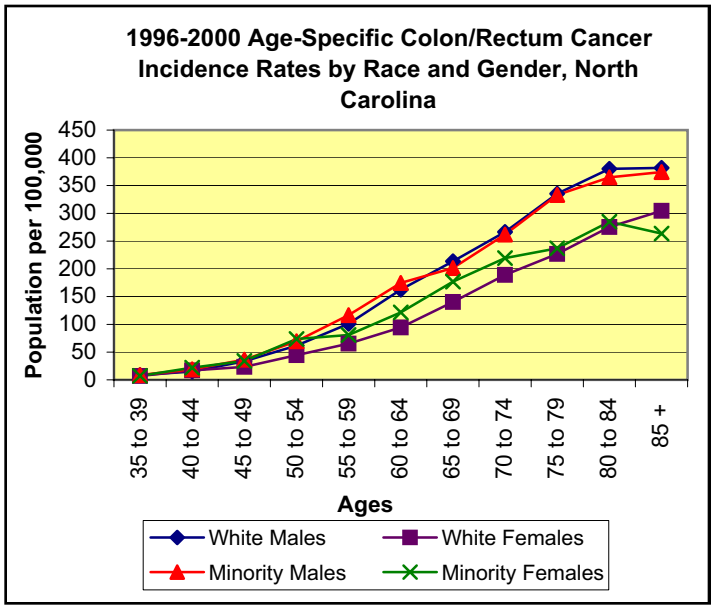
The Breast Cancer Coalition of North Carolina sponsors several programs and activities aimed at reducing breast cancer across the state. The Coalition's goal is to give women throughout North Carolina opportunities to obtain accurate and vital information to release them from the web of confusion that often follows a diagnosis of breast cancer, and to provide resources and contacts to address the wide and varied experiences of breast cancer survivors. The Coalition has produced North Carolina's first comprehensive, statewide resource directory for breast cancer patients and survivors. The *Resource Directory* is available free of charge upon request and can be ordered online, http://bcresources.med.unc.edu, or by phone, 1-800-514-4860. For more information about the Coalition call 1-800-419-5481 or visit their website, http://www.breastcancernc.org.

In conjunction with the NCI and the National Institutes of Health, Duke University is conducting the Women's Intervention Nutritional Study (WINS). WINS will examine how a diet low in fats affects breast cancer recurrence in post-menopausal women diagnosed with early-stage breast cancer. For more information about WINS, talk with a physician or contact Duke University at 1-888-ASK-DUKE.

The mission of the Susan G. Komen Breast Cancer Foundation is to eradicate breast cancer as a life-threatening disease. Since 1982, the Komen Foundation has funded research grants, supported education, screening and treatment projects in communities around the world; nearly 700 international grants for breast cancer research projects have been awarded, totaling more than $87 million. Four Komen Chapter Affiliates are based in North Carolina. The N.C. Foothills Affiliate, http://www.komenncfoothills.org, serves Burke, Caldwell, and Catawba counties; the N.C. Triad Affiliate, http://triadrace.com, serves Alamance, Davidson, Davie, Forsyth, Guilford, Surry, Stokes, and Yadkin counties; the N.C. Triangle Affiliate, http:/www.nctriangle.org, serves central and eastern parts of the state; and the Charlotte Affiliate, http://www.charlottefrtc.org, serves Cabarrus, Gaston, Iredell, Lincoln, Mecklenburg, Rowan, Stanly, Union counties and York County, S.C. For more information about the Komen Foundation, call 1-800-462-9273 or visit their website, http://www.komen.org.

Colon and Rectum

Incidence: About 4,435 new colon and rectum cancer cases are projected for North Carolina in 2004. Colorectal cancers are the third most common cancer in both men and women. From 1996 to 2000, slightly more than 60% of North Carolina's colorectal cancer cases



were diagnosed in the piedmont region of the State. The remaining cases were in the coastal and mountain regions, 30% and 10%, respectively. Research is ongoing to understand these patterns.

Mortality: For the past fifteen years, deaths from colorectal cancer have declined nationally. However, colorectal cancer will claim the lives of 1,695 North Carolinians in 2004.

Warning Signals: In the early stages, colorectal cancer usually causes no symptoms. Rectal bleeding, blood in the stool, a change in bowel habits, and cramping in the lower abdominal area may signal advanced disease.

Risk Factors: The primary risk factor for colorectal cancer is age. Individuals 50 years and older account for 90% of colorectal diagnoses in North Carolina. Diets high in fat and/or low in fiber can increase one's risk. Other factors include a sedentary lifestyle, obesity, smoking, and heavy alcohol consumption. A personal or family history of colorectal

cancer, polyps, inflammatory bowel disease, ulcerative colitis, or Crohn's disease are associated risk factors.

Prevention: U.S. studies have shown that individuals whose diets are high in fruits and vegetables, in particular cruciferous vegetables (e.g., broccoli, brussels sprouts, and cabbage), may face only half the risk of colon cancer as others whose diets are low in those foods. Diets high in fat and those that include a lot of meat, especially grilled meats, appear to boost the risk of colon cancer. To help reduce the risk of colorectal cancer, incorporate vitamins A and C into the diet, reduce alcohol intake, avoid obesity, and increase physical activity. Recent studies have suggested that estrogen replacement therapy and non-steroidal anti-inflammatory drugs such as aspirin may also reduce colorectal risks. The early detection and removal of precancerous polyps can greatly reduce the chance of developing or dying from invasive colorectal cancer.

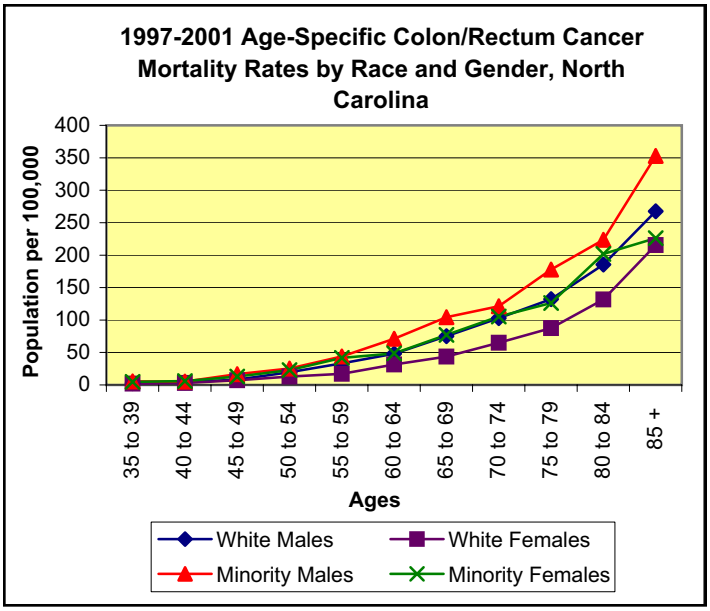
Early Detection: Adults 50 years and older who have an average risk should have one of the following:

1) annual fecal occult blood test (FOBT);
2) flexible sigmoidoscopy every five years;
3) annual FOBT and flexible sigmoidoscopy every five years (of these three options the ACS prefers option 3);
4) double-contrast barium enema every five years; or
5) colonoscopy every ten years.

Each option is an acceptable choice for average risk adults. High-risk individuals (e.g., personal history of colorectal cancer, adenomatous polyps, chronic bowel disease, family history of colorectal cancer, or polyps, or a family member with hereditary colorectal cancer syndromes) should talk to a physician about a different testing schedule. According to the 2002 N.C. Behavioral Risk Factor Surveillance System (BRFSS) Survey, 29.4% of North Carolina residents aged 50 and older reported having a FOBT within the last year; 40.8% of North Carolinians reported having a sigmodoscopy or colonoscopy within five years.

Treatment: Surgery is the most common method used if the cancer has not spread. For cancer that has penetrated the bowel wall or spread to the lymph nodes, chemotherapy or chemotherapy with radiation is given before and after surgery. Colostomy (creation of abdominal opening for the elimination of body wastes) is seldom needed for colon cancer patients and is infrequently required for rectal cancer patients.

Survival: When colorectal cancer is detected in an early, localized stage, the five-year survival rate in the U.S. is 90%. Approximately 33% of North Carolina cases are diagnosed at an early stage. Once the cancer is at the regional stage, the survival rate drops to 66%. The survival rate for persons with distant metastases is around 9%.



Colorectal Cancer Control Activities

In North Carolina, the Colorectal Cancer Screening Bill, Senate Bill 132, was passed to mandate insurance companies to provide age-appropriate colorectal cancer screening in accordance with the American Cancer Society's guidelines.

The Colon Imaging Study is currently underway at Duke's Comprehensive Cancer Center. This study compares various early detection techniques to determine which is the most accurate, the most cost-effective, and the most preferred by patients. To be a study participant, an individual must be 60 years old or younger and be experiencing either one or all of the following: hidden blood in the stool, rectal bleeding, or iron deficiency anemia. For more information contact a physician, the Duke Comprehensive Cancer Center at (919) 668-1798,

or the Durham Veterans' Administration Medical Center at (919) 668-0731.

The National Cancer Institute in 1999 awarded the University of North Carolina at Chapel Hill (UNC-CH) a $1.5 million grant to assist in the early detection and prevention of colon cancer. The project will examine strategies to persuade both colon cancer survivors and others not yet affected to change their behaviors. Investigators are interviewing people in 33 North Carolina counties and taking blood samples to examine behavioral and genetic factors that boost colon cancer risk. Study participants will receive telephone counseling and printed materials, such as personalized newsletters, to assist them in changing their behavior. Towards the end of the study, investigators will re-interview all 800 participants and take a blood sample from half of them to determine whether they have altered their diets and how effective researchers' efforts have been.

The North Carolina Colorectal Cancer Study is currently underway at UNC-CH. The study has two purposes:

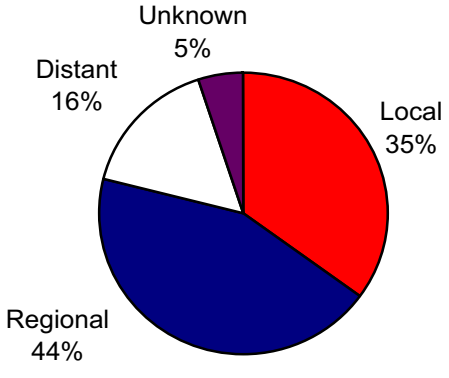
- to identify environmental and lifestyle risk factors for colorectal cancer in blacks and whites. Personal characteristics, family history, laxative use, physical activity, aspirin/nonsteroidal use, and diet will be explored to determine how each affects rectal cancer risk.
- to evaluate factors that might account for the higher rectal cancer mortality among blacks, including income/poverty, insurance, transportation, access to care, attitudes about the medical care system and diagnostic delay.

Participants must be between the ages of 40 and 80, reside in the specified 33-county area, and newly diagnosed with rectal cancer. Contact a physician or call (919) 966-9340 for more information.

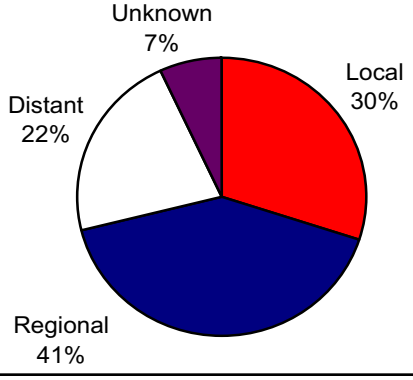
The Cancer Care Outcomes Research Study (CanCORS) at UNC-CH also focuses on colorectal cancer. CanCORS examines the relationship of processes of colorectal cancer care to clinical and patient care outcomes. The effectiveness of treatment intervention methods will be evaluated, as well as health care delivery factors that contribute to racial disparities in colorectal cancer mortality. Participant eligibility coincides with the Colorectal Study but is limited to a 22-county area. More information about CanCORS can be obtained by talking to a physician or calling (919) 966-9340.

African Americans 40 to 75 years of age in a 16-county area are being targeted for entry into the North Carolina Family Registry. North Carolina is one site in an international consortium to register families with a history of colorectal cancer. The Registry, operating through UNC-CH, hopes to register 360 families, for a total of 950 family members. Contact a physician or UNC-CH at (919) 966-9340 to learn more about the North Carolina Family Registry.

1996-2000 Percentage of White Colon/Rectum Cancer Cases at Stage of Diagnosis, North Carolina

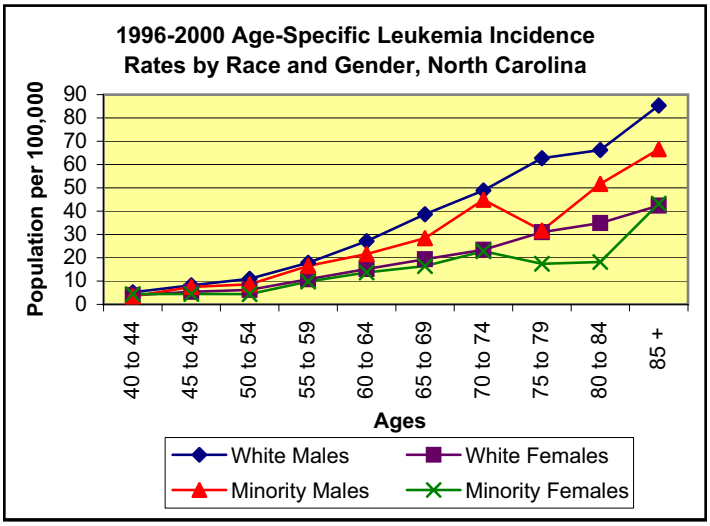


1996-2000 Percentage of Minority Colon/Rectum Cancer Cases at Stage of Diagnosis, North Carolina



Leukemia

Incidence: A projected 975 North Carolinians will be diagnosed with leukemia in 2004. Although leukemia is thought of as a childhood disease, it is diagnosed 10 times more often in adults than children. Acute lymphocytic leukemia accounts for most childhood cases. For adults, the most common types are acute myeloid and chronic lymphocytic. The age-adjusted rate for the state is 9.6 cases per 100,000 population for 1996-2000.



Mortality: Myelocytic cancer is generally more fatal than other forms of leukemia. For 2004, 605 leukemia deaths are predicted for North Carolina.

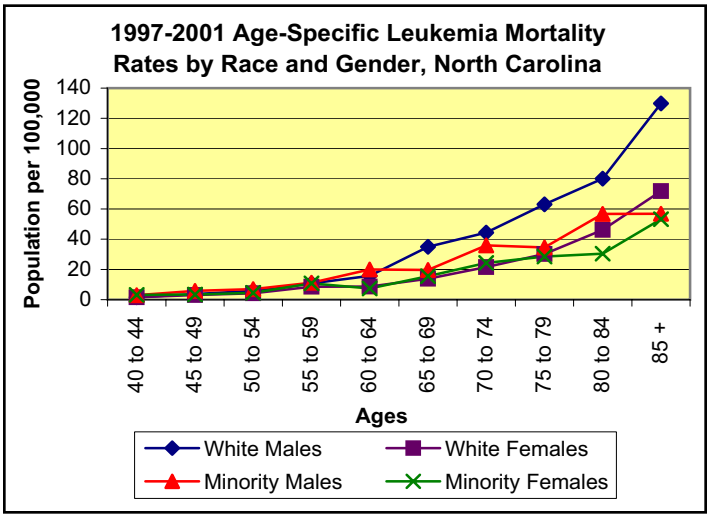
Warning Signals: Early signs may include fatigue, paleness, weight loss, repeated infections, bruising easily, and nosebleeds or other hemorrhages. In children, these symptoms can appear suddenly. Chronic leukemia can progress slowly with few symptoms.

Risk Factors: Leukemia strikes both sexes and all ages, males more frequently. Causes of most leukemias are unknown. Persons with Down Syndrome and certain other genetic abnormalities have higher incidence rates. Some leukemias have been linked to excessive exposure to ionizing radiation. Leukemia may be a cancer treatment side-effect. Myeloid leukemia is linked to cigarette smoking and certain chemicals such as benzene, a toxin that is present in gasoline and cigarette smoke. A retrovirus, human T-cell leukemia/lymphoma virus-I (HTLV-1), causes certain leukemias and lymphomas.

Early Detection: Because symptoms often appear in other, less serious conditions, leukemia may be difficult to diagnose early. When a physician suspects leukemia, a diagnosis can be made using blood tests and a biopsy of the bone marrow.

Treatment: Leukemia is a cancer of the blood-forming tissues. When leukemia occurs, millions of abnormal, immature white blood cells are released into the circulatory system. These abnormal cells crowd out the normal white cells (which fight infection), platelets (which control hemorrhaging), and red blood cells (that carry oxygen). Chemotherapy is the most effective method of treating leukemia, either in combinations or as a single agent. Blood transfusions and antibiotics are used as supportive treatments. Today, research is yielding new and better drugs, (e.g., Gleevec for chronic myeloid leukemia) to treat leukemia. To destroy hidden cancer cells, therapy of the central nervous system is a standard treatment, especially in acute lymphocytic leukemia. Under appropriate conditions, a bone marrow transplant may be useful for treating certain leukemias.

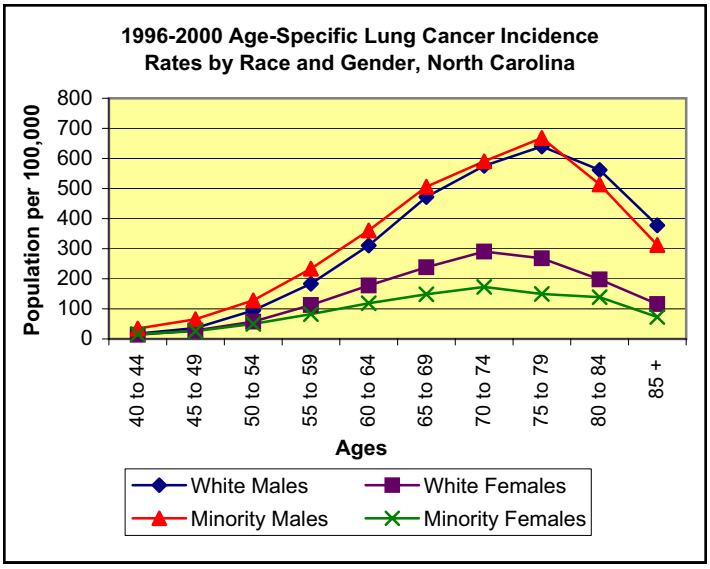
Survival: Survival rates differ according to leukemia type. Nationally, the five-year survival rate for acute myeloid leukemia is 19%; it is 74% for chronic lymphocytic leukemia. Collectively, the one-year survival rate for all leukemias is 64%. Survival for acute lymphocytic leukemia patients has improved tremendously. In the mid 1970s, the five-year survival rate was 38%. By the mid 1990s, the survival rate increased to 64%. During the same period, survival rates for children with acute lymphocytic leukemia increased from 58% to 88%.



Lung

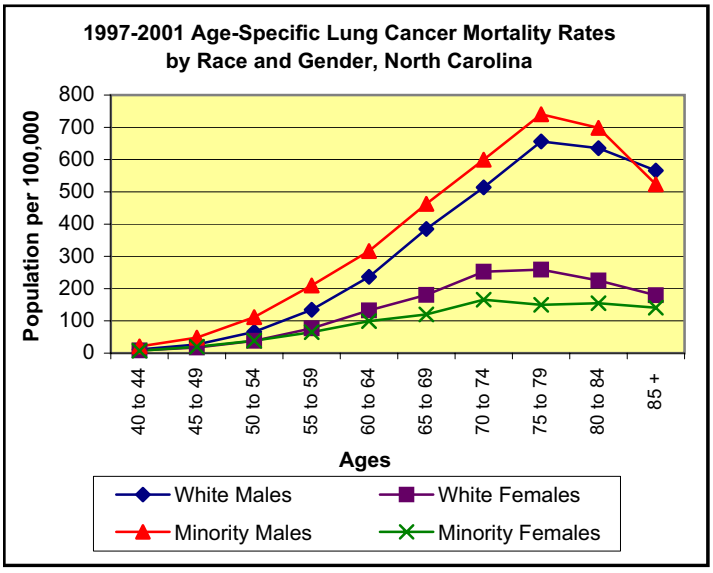
Incidence: In 2004, a projected 5,315 North Carolinians will get lung cancer. The incidence rate, which until recently has been increasing steadily for both sexes, is now decreasing among men but continues to increase among women. In 1996-2000, North Carolina minority males had the highest age-adjusted incidence rate (109.9 per 100,000) followed by white males (99.2 per 100,000), white females (49.7 per 100,000), and minority females (33.8 per 100,000). New lung cancer cases (173,770) will account for 13% of all cancer diagnoses in the U.S. in 2004.

Mortality: For North Carolina, 4,595 lung cancer deaths are projected for 2004. Lung cancer became the leading cause of cancer death for North Carolina women in 1990, exceeding breast cancer. This phenomenon occurred three years earlier for the nation as a whole. In 1997-2001, minority males had the highest age-adjusted mortality rate (110.6 per 100,000), followed by white males (90.5), white females (41.5), and minority females (30.2).



Warning Signals: Persistent cough, sputum streaked with blood, chest pain, recurring pneumonia or bronchitis.

Risk Factors: Cigarette smoking is the predominant risk factor for lung cancer. According to the 2002 Behavior Risk Factor Surveillance System (BRFSS) Survey, 26.2% of North Carolinians eighteen years and older are cigarette smokers. Of that percentage, 36.5% are between the ages of 18 and 24. Passive exposure to cigarette smoke increases the risk for nonsmokers. Industrial exposure to certain agents (e.g., polycyclic aromatic hydrocarbons, arsenic, asbestos, and other mineral fibers or dusts) increases lung cancer risk, especially for smokers. Exposure to ionizing radiation poses an increased risk, as may residential exposure to radon (a radioactive gas). Insufficient levels of dietary vitamin A have also been linked to lung cancer.



Prevention: All cancers caused by cigarette smoking and heavy use of alcohol are preventable. Tobacco is responsible for about 30% of all cancer deaths and almost 87% of all lung cancer deaths. Studies have shown that the risk of lung cancer is lower among smokers and nonsmokers who consume at least five servings of fruits and vegetables daily. However, consuming excessive amounts of beta-carotene and/or vitamin A has increased lung cancer risk among smokers. Although healthful eating habits may reduce the risk, the best strategy for preventing lung cancer is to avoid tobacco (including cigarettes, chewing tobacco, and snuff) and exposure to environmental or secondhand smoke. In those who stop smoking, damaged lung tissue often returns to normal.

Smoking avoidance is very important in adolescence, when smoking habits often begin and biologic effects may be greatest. Unfortunately, the decline in adult tobacco use has slowed, and tobacco use in youth is on the rise. People who work with potentially cancer-causing chemicals should take appropriate measures to avoid harmful exposure.

Early Detection: Because symptoms often do not appear until the disease is in an advanced stage, early detection of lung cancer is very difficult. At this time, no known screening procedure exists for lung cancer. Damaged respiratory tissues often become normal again if smokers stop smoking at the time of early (pre-cancerous) cellular changes. Chest x-rays, microscopic analyses of cells contained in sputum, and fiber-optic examination of bronchial passages help in diagnosis. Newer tests, such as low-dose helical CT scans and molecular markers in sputum, appear to detect lung cancer early and are currently being evaluated.

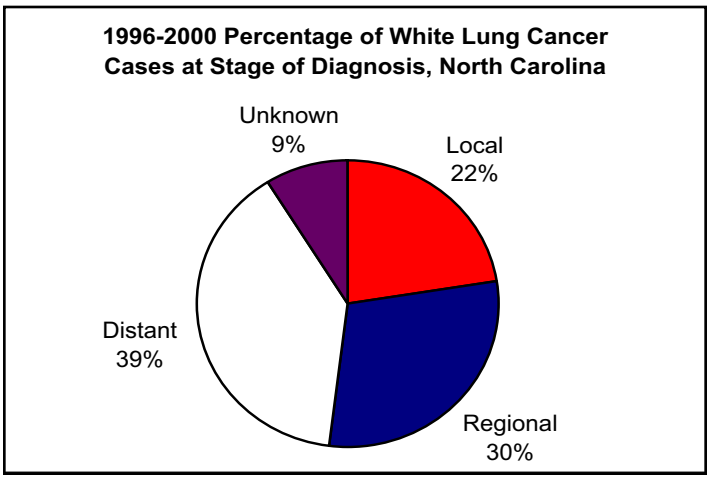
Treatment: Determined by the type and stage of the cancer, options may include surgery, radiation therapy, and chemotherapy. For many localized cancers, surgery is usually the treatment of choice. Because the disease has usually spread by the time it is discovered, radiation therapy and chemotherapy are often needed in combination with surgery. In small-cell cancer, chemotherapy alone or combined with radiation has replaced surgery as the treatment of choice; with this regimen a large percentage of patients experience remission, which in some cases is long lasting.

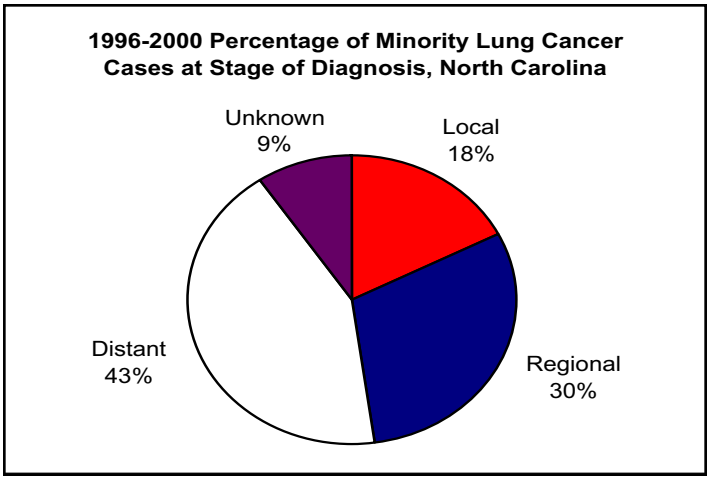
Survival: The one-year survival rate for lung cancer in the U.S. has increased from 37% in 1975 to 42% in 1999, largely due to improvements in surgical techniques. However, for all stages of disease combined, the five-year relative survival rate for lung cancer is only 15% in all patients. The rate is 49% for all cases detected early when the disease is still localized. Unfortunately, only 21.6% of lung cancers in North Carolina residents are discovered that early.

Lung Cancer Control Activities

Physicians at the University of North Carolina at Chapel Hill (UNC-CH) School of Medicine are participating in a study aimed at detecting early signs of lung cancer among high-risk individuals. The study is in collaboration with scientists from the National Institute of Environmental Health Sciences and involves a camera device called LIFE, lung imaging fluorescence endoscope. The LIFE unit, which is approved by the U.S. Food and Drug Administration, is used to detect pre-malignant or malignant changes inside the lungs. UNC-CH is the only facility in North Carolina with the device. People interested in volunteering for the study can call Dr. M. Patricia Rivera at (919) 966-2531 or send e-mail to mprivera@med.unc.edu.

Recognizing that lung cancer takes more lives than any other cancer, the Leo W. Jenkins Cancer Center of University Health Systems of Eastern Carolina established the Thoracic Oncology (Lung Cancer) Clinic. Located in Greenville, the Lung Cancer Clinic is designed to make the patient's experience as positive as possible. A pulmonologist, medical oncologist, radiation oncologist and thoracic surgeon will see the patient on the same day. In addition to the medical staff, people who provide ancillary services such as nutrition, nurse case management, social work, medication counseling and patient financial counseling are also on hand. In one day, the patient will see everyone and get everything that is needed. Physicians and support staff want each patient's visit to move as quickly and smoothly as possible. However, if more time is



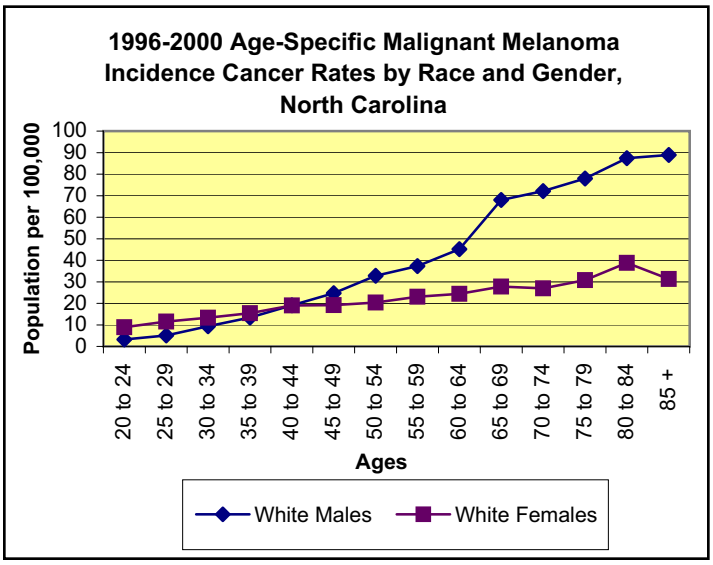


needed to address a patient's questions and concerns, a staff member is prepared to spend more time with the patient. For additional information about the Lung Cancer Clinic, call (252) 816-1912 or visit the Clinic's website at http://www.ecu.edu/ecuphysicians/cancercenter.htm.

Melanoma (Skin)

Incidence rates for skin cancers are ten times higher among whites than African Americans.

Incidence: Nationally, over one million cases of the highly curable basal and squamous cell skin cancers occur annually. The most serious skin cancer is melanoma, and 1,445 North Carolinians will be diagnosed with this form of skin cancer in 2004. During the 1970s, the national incidence rate for melanoma increased about 6% per year. Since 1981, the melanoma incidence rates have increased an average of 3% each year. Other forms of skin cancer include Kaposi sarcoma and cutaneous T-cell lymphoma.



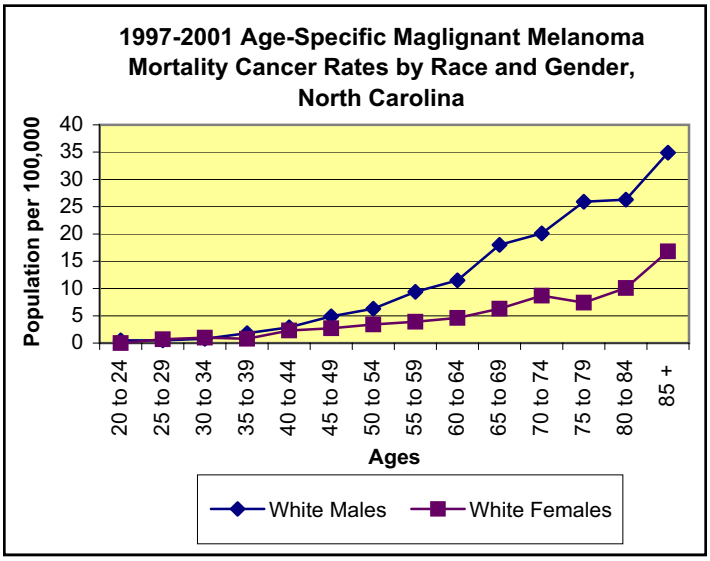
Mortality: An estimated 220 North Carolinians are likely to die in 2004 from malignant melanoma. North Carolina melanoma mortality rates are higher than the nation's and are especially high in rural counties.

Warning Signals: Any change on the skin, especially in the size or color of a mole or other darkly pigmented growth or spot. Scaliness, oozing, bleeding, or change in the appearance of a bump or nodule; the spread of pigmentation beyond its border; a change in sensation; itching, tenderness, or pain.

Risk Factors: Sunlight exposure is the major risk factor for all skin cancers. Individuals with fair complexions, light hair and eye colors, and a tendency to freckle are particularly vulnerable. Occupational exposure to coal, soot, arsenic, creosote, tar, and radium could increase one's

risk for developing skin cancer. Ionizing radiation exposure, a familiar history (e.g., pigmented nevi syndrome) and rare skin conditions (e.g., xeroderma pigmentosum) are other risk factors. People with weak immune systems or vitamin D deficiencies are susceptible to developing skin cancer.

Prevention: To reduce the potential of developing skin cancer, limit or avoid sunlight exposure between the hours of 10 a.m. and 4 p.m. When outdoors, protect the skin as much as possible. Wear a hat that shades the face, neck and ears. Wear long-sleeved shirts, long pants, and sunglasses that protect the skin around the eyes. Use water-resistant sunscreen with a sun protection factor (SPF) of 15 or higher. Liberally apply the sunscreen 15 to 30 minutes before going outside. Because of the possible link between severe childhood sunburns and greatly increased melanoma in later life, children, in particular, should be protected from the sun (e.g., seek shady areas for outdoor playtime).



Early Detection: Early detection is critical. Recognition of changes in skin growths or the appearance of new growths is the best way to find skin cancer early. Adults should examine their skin each month, and have suspicious lesions promptly evaluated by a physician. Basal and squamous cell skin cancers often take the form of a pale, wax-like, pearly nodule, or a red, scaly, sharply outlined patch. A physician should check any sudden or progressive change in a mole's appearance. Melanomas often start as small, mole-like growths that increase in size, change color, become ulcerated, and bleed easily. The ***ABCD*** rule outlines warning signals of melanoma:

- ***A is for asymmetry*** - one-half of the mole does not match the other.
- ***B is for border*** - the edges are ragged, notched, or blurred.
- ***C is for color*** - the pigmentation is not uniform.
- ***D is for diameter*** greater than 6 millimeters. Any sudden or progressive increase in size should be evaluated.

Treatment: Methods for treating basal cell cancer and squamous cell cancer include surgery (used in 90% of cases), radiation therapy, electrodessication (tissue destruction by heat), cryosurgery (tissue destruction by freezing), and laser surgery for early skin cancer. For malignant melanoma, the primary growth must be removed entirely, and the removal of nearby lymph nodes may be necessary. Microscopic examination and removal of all suspicious moles is essential. Advanced cases of melanoma are treated with radiation therapy, immunotherapy or chemotheraphy.

Survival: For basal or squamous cell cancers, a cure is highly likely if the cancer is detected and treated early. Malignant melanoma can spread to other parts of the body quickly. When melanoma is detected early, it is highly curable with the proper treatment. The U.S. five-year survival rate for patients with melanoma is 90%. The five-year survival rate for local malignant melanoma is 97%; survival rates for regional and distant disease are about 60% and 14%, respectively. In North Carolina, nearly 84% of skin melanomas are diagnosed in the early stages.

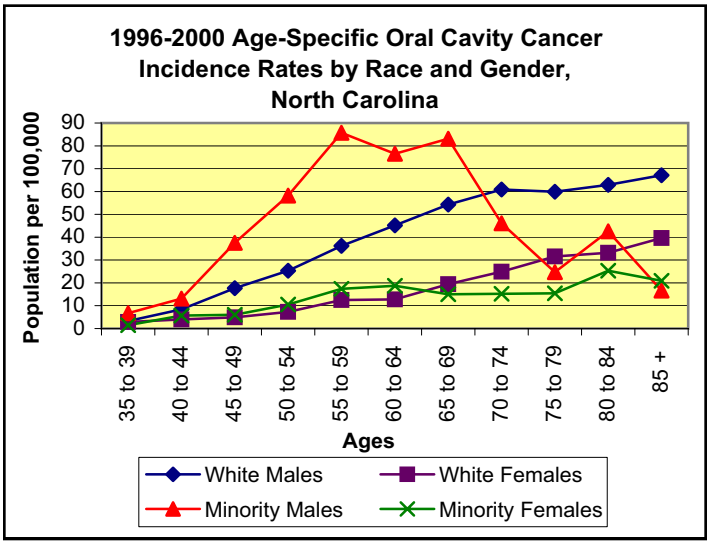
Melanoma Cancer Control Activities

The University of North Carolina Lineberger Comprehensive Cancer Center, in collaboration with the North Carolina Central Cancer Registry, is conducting the North Carolina Melanoma Study - Genes Environment and Melanoma (GEM). Funded by the National Cancer Institute, GEM will investigate the causes of malignant melanomas. The primary goal is to identify and evaluate the interactions of genetic susceptibility and sun exposure. Individuals in a 42-county area with a malignant diagnosis in 2000 were recruited to participate. They will be followed for four years to determine if a second malignancy develops.

Oral Cavity and Pharynx

Over 90% of oral cancers are preventable.

Incidence: An estimated 875 North Carolinians will be diagnosed with cancer of the oral cavity and pharynx in 2004. For North Carolina, incidence rates are more than two and one-half times higher in men than in women, and are greatest in men over age 50. North Carolina incidence rates, excluding white males, for cancer of the oral cavity and pharynx declined slowly in the 1990s; minority males and females had the greatest decline.



Mortality: A projected 240 deaths will occur in North Carolina in 2004. Mortality rates have declined since the late 1970s.

Warning Signals: A sore that bleeds easily and does not heal; a lump or thickening; a red or white patch that persists. Late symptoms often include difficulties in chewing, swallowing, or moving tongue or jaws.

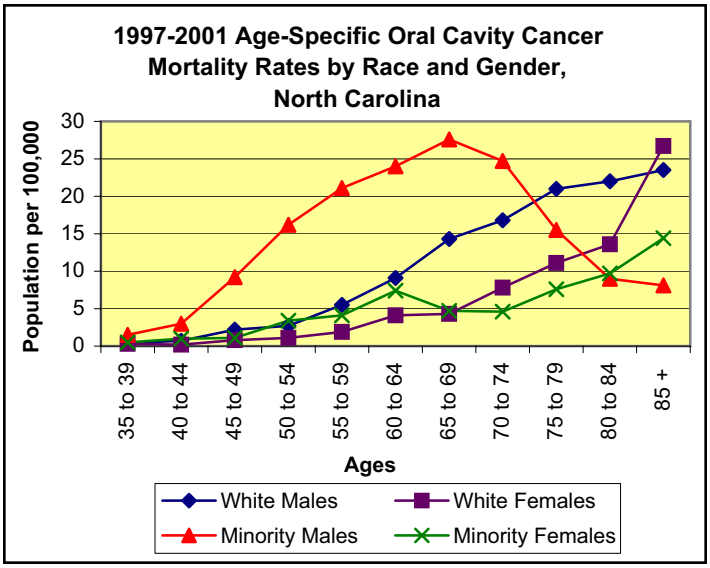
Risk Factors: The primary risk factor for oral cancer is tobacco use, notably smokeless tobacco. The risk for men is twice that for women, except when snuff dipping or when large amounts of alcohol are consumed. Nutritional deficiencies (vitamins A and B, especially riboflavin) may raise oral cancer risk, as may sharp teeth or other repeated (chewing) irritation. Obesity increases the risk of cancer in the lower esophagus and at the junction of the esophagus and stomach. This increased risk is likely due to acid reflux (the flow of stomach acid into the esophagus). Sunlight exposure raises the risk for lip cancer (e.g., in agricultural occupations), as do chemical exposures associated with woodworkers.

Prevention: To reduce the risk of developing cancer of the oral cavity and pharynx, avoid all tobacco products; control alcohol intake; avoid obesity; and eat at least five servings of fruits and vegetables a day. Good oral hygiene is a sound preventive measure to reduce oral cancer risk.

Early Detection: Cancer can affect any part of the oral cavity, including the lip, tongue, mouth, and throat. Dentists and primary care physicians have the opportunity, during regular checkups, to see abnormal tissue changes and detect cancer at an early, curable stage.

Treatment: Principal methods are radiation therapy and surgery. Chemotherapy may be used in addition to surgery and/or radiation in advanced disease.

Survival: For the U.S., the one-year survival rate for all stages combined is 84%. The five-year and ten-year survival rates for oral cancer patients are about 57% and



45%, respectively. Forty percent of oral cancers in North Carolinians are diagnosed at an early stage.

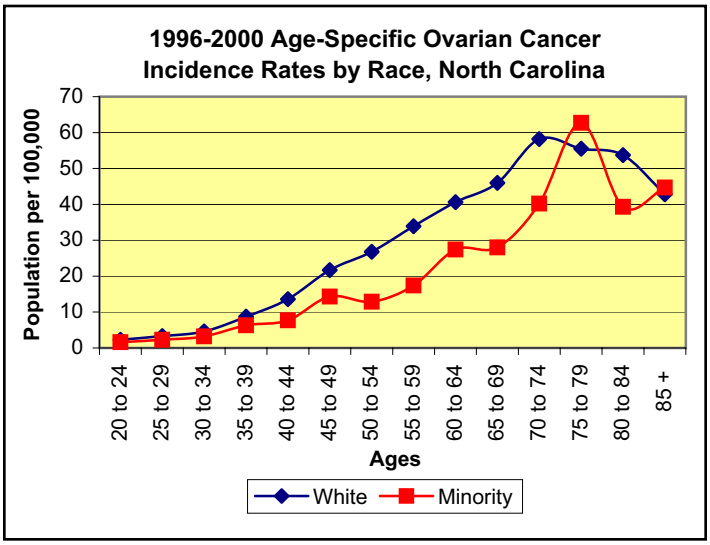
Oral Cancer Control Activities

Currently underway at the University of North Carolina at Chapel Hill Epidemiology Department is the Carolina Head and Neck Study (CHANCE). Oral cavity, pharyngeal, and laryngeal cancers are being studied to evaluate the relationship between changes in genes and exposure to tobacco and alcohol. This relationship may modify the

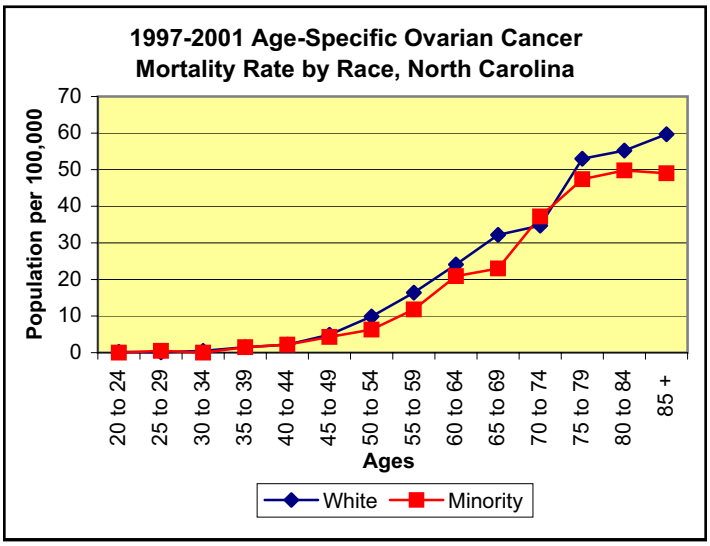
risk of squamous cell carcinoma of the head and neck (SCCHN). A trained nurse conducts in-home interviews; mouth swabs, blood and tumor samples are taken. Participates must be between the ages of 20 and 80 years. For more information about CHANCE, contact a local physician or call (919) 843-4764.

Ovary

Incidence: Approximately 765 North Carolina women will be diagnosed with ovarian cancer in 2004. This cancer accounts for about 4% of the cancers in women and ranks second among gynecologic cancers.



Mortality: During 2004, an estimated 410 women in North Carolina will die of ovarian cancer. Although gynecological cancers as a group rank third in incidence for women, ovarian cancer causes more deaths than all other cancers of the female reproductive system combined.



Warning Signals: Ovarian cancer is often "silent," showing no signs or symptoms until late in its development. The most common sign is swelling of the abdomen, caused by fluid accumulation. Abnormal vaginal bleeding is rare. In women over forty, vague digestive

disturbances (stomach discomfort, gas, and distention) that persist and cannot be explained may indicate a need for evaluation for ovarian cancer.

Risk Factors: Ovarian cancer risk increases with age, peaking in the late seventies. Women who have never experienced pregnancy are at an elevated risk. Pregnancy, tubal ligation, and oral contraceptive use appear to reduce the risk of developing ovarian cancer. Fertility drugs and hormone replacement therapy increase the risk. Women with a personal or family history of breast or ovarian cancer have an elevated risk. In these families, BRCA1 or BRCA2 mutations have been observed. Studies have suggested that preventive surgery to remove the ovaries and fallopian tubes can decrease the risk of ovarian cancers and other gynecological cancers in women with BRCA1 and BRCA2 mutations. Hereditary non-polyposis colon cancer (HNPCC) is also associated with endometrial and ovarian cancer. Recently, dietary factors, including high consumption of dairy products, have arisen as a controversial risk factor. Incorporating fruits and vegetables into the diet may lower the risk of developing ovarian cancer. Oral contraceptive use and pregnancy seem to lower the risk. Industrialized countries have the highest incidence rates, with the exception of Japan.

Early Detection: Periodic and thorough pelvic examinations are important. *The Pap test, useful in detecting cervical cancer, rarely reveals early ovarian cancer*. Transvaginal ultrasound and a tumor marker, CA125, may help in diagnosis but are not used for routine screening.

Treatment: Surgery, chemotherapy, and radiation therapy are treatment options. Surgical options include removal of the uterus (hysterectomy), one or both ovaries and the fallopian tubes (salpingo-oophorectomy). In some very early tumors, only the involved ovary will be removed, especially in young women. In advanced disease, an attempt is made to remove all of the intra-abdominal disease to improve the effect of chemotherapy.

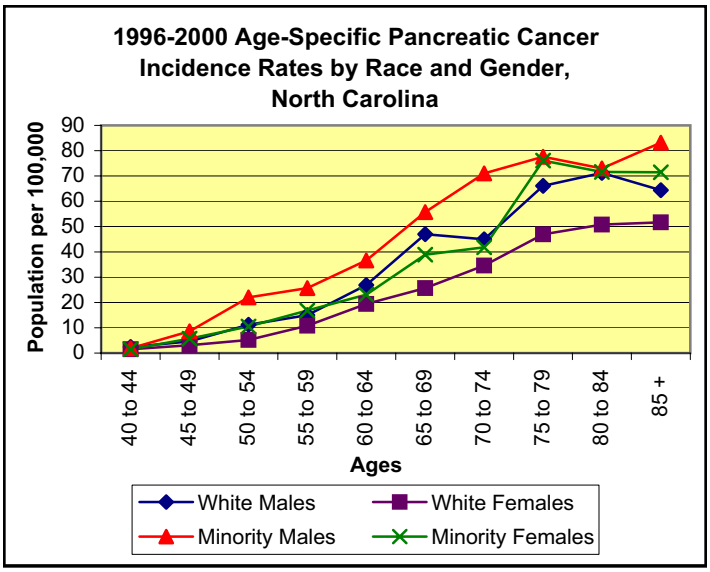
Survival: Survival varies with age. In the U.S., women younger than 65 are twice as likely to survive five years following diagnosis as women 65 and over, 66% and 33%, respectively. Overall, nearly 78% of women with ovarian cancer survive one year after diagnosis; the five-year survival rate for ovarian cancer is 53%. If diagnosed and treated early, the five-year survival rate is 95%; however, only about 29% of all cases are detected at the local stage. Five-year survival rates for women with regional and distant disease are 72% and 31%, respectively.

Ovarian Cancer Control Activities

The North Carolina Ovarian Cancer Study operates through Duke's University Medical Center with assistance from the University of North Carolina at Chapel Hill. The study focuses on ovarian cancer (including borderline) and primary peritoneal cancer and will identify environmental, reproductive, and genetic factors that contribute to the development of ovarian cancer. In addition, this study hopes to determine whether molecular alterations in ovarian cancers are related to epidemiological risk factors, age at diagnosis, and tumor characteristics. In-home interviews will be conducted and blood and tumor specimens will be collected from women between the ages of 20 and 74. Recruitment has begun in a 48-county area. Additional information about the Ovarian Study can be obtained from a physician or by calling 1-888-246-1250.

Pancreas

Incidence: Approximately 900 new pancreatic cancer cases are projected for 2004. Most cases will occur in rural counties. In the 1990s, the incidence rates in North Carolina remained constant for both men and women.



Mortality: In 2004, 845 North Carolinians are expected to die from pancreatic cancer. Since the 1970s, the death rate among men has steadily declined, while it has leveled off in women after increasing from 1975 to 1984. This relatively rare cancer has risen to become the fifth most frequent cause of cancer deaths in the U.S.

Warning Signals: Pancreatic cancer is usually "silent" until the advanced stages. If the cancer develops near the common bile duct, its blockage may lead to jaundice (a yellowing of the skin caused by pigment accumulation). If this symptom occurs, the cancer could be detected at an early stage.

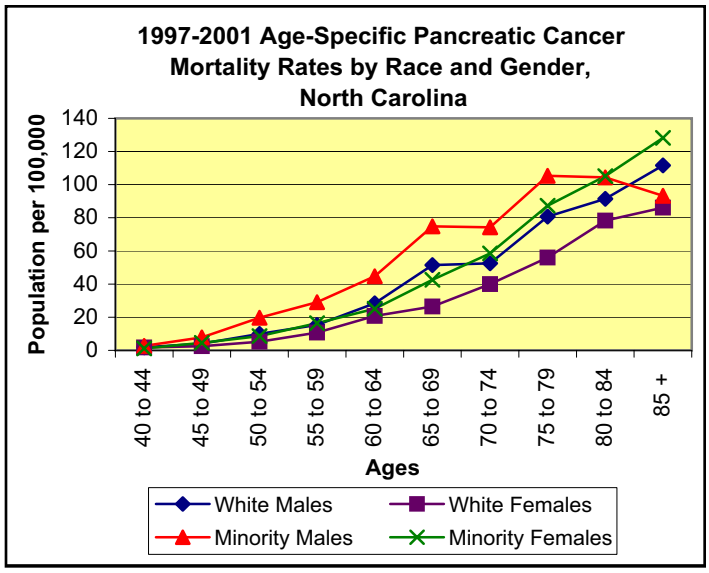
Risk Factors: The risk factors for pancreatic cancer are not well understood. Incidence rises with age; most pancreatic cancer cases occur between the ages of 65 and 79. Pancreatic cancer occurs more commonly in men and among African Americans. Smoking is a risk factor. Incidence rates among smokers are more than two times higher than for non-smokers. Occupational chemical exposure to aromatic solvents, exposure to petroleum, coal tar, and some pesticides have been suggested as possible risk factors. Adult-onset diabetes, impaired glucose tolerance, cirrhosis and chronic pancreatitis may also be risk factors. Some individuals who had operations to treat ulcers of the stomach and small intestines may have an increased risk of developing pancreatic cancer. Countries whose populations consume a high-fat diet have higher incidence rates.

Prevention: Pancreatic cancer risk can be reduced by not using tobacco and by maintaining a healthful weight, remaining physically active, and eating five or more servings of fruits and vegetables a day.

Early Detection: At present, only a biopsy yields a certain diagnosis, and because of the "silent" course of the disease, the need for the biopsy is likely to be obvious only after the disease has advanced. Researchers are focusing on ways to diagnose pancreatic cancer before it reaches the distant stage. Ultrasound imaging and computerized tomography (CT) scans are being tested.

Treatment: Surgery, chemotherapy, and radiation therapy are treatment options. Unfortunately, these options have little influence on the outcome. Diagnosis is usually so late that none of these are used. Clinical trials with several new agents may offer improved survival and should be considered as an option.

Survival: For all stages combined, the one-year survival rate is 24%, and 4% of patients live more than five years after diagnosis in the U.S. The five-year survival rate for people with local-stage diagnosis is only 17%.

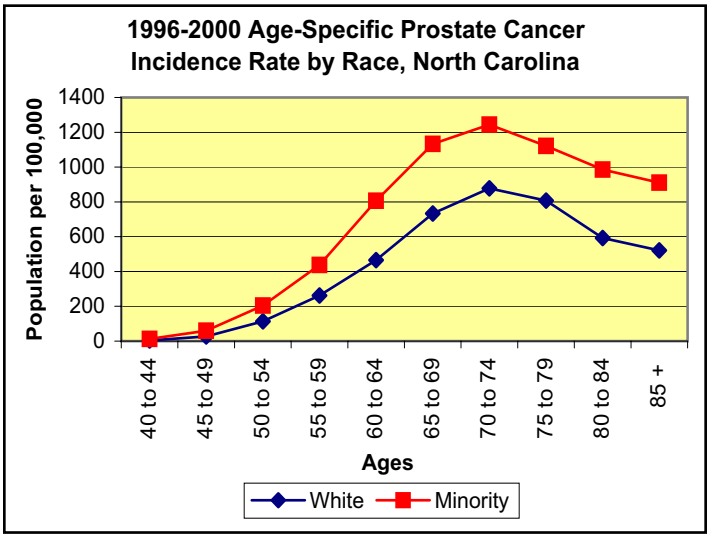


Prostate

Prostate cancer strikes more men than any other cancer, both in North Carolina and the United States.

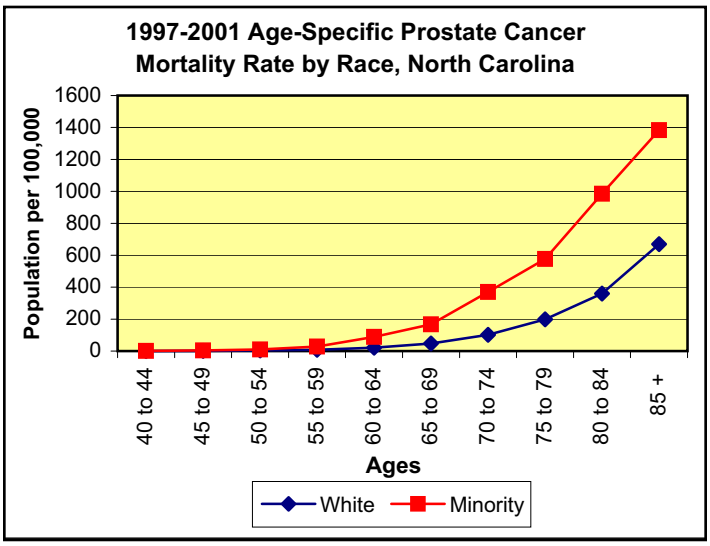
Incidence: An estimated 6,050 new prostate cancer cases are projected for 2004 in North Carolina. Approximately one man in eleven will develop prostate cancer during his lifetime. According to the ACS, incidence rates increased dramatically in the U.S. between 1988 and 1992; the prostate-specific antigen (PSA) blood test has allowed for more and earlier diagnoses in men without symptoms. Prostate incidence rates have decreased and leveled off, especially among the elderly. However, rates continue to rapidly increase for men younger than 65. Prostate cancer is now more common than lung cancer among men, although lung cancer takes many more lives. For 1996-2000, the age-adjusted incidence rate was 147.3 for North Carolina men. When the rates are broken down by race, a huge disparity between white and African American men existed, 136.2 and 216.5, respectively.

Mortality: Approximately 925 prostate cancer deaths will occur in North Carolina in 2004. Prostate cancer is



the second leading cause of cancer death among men. (*Lung cancer is number one.*) The 1997-2001 age-adjusted prostate cancer death rates were 28.5 deaths per 100,000 males for whites and 77.9 for minorities. North Carolina's minority death rate has led the nation for several years.

Warning Signals: In the early stages, usually no symptoms exist. As the disease advances, individuals may experience weak or interrupted urine flow; inability to urinate or difficulty starting or stopping the urine flow; the need to urinate frequently, especially at night; blood in the urine; pain or burning during urination; continuing pain in the lower back, pelvis, or upper thighs. Most of these symptoms are nonspecific and may be similar to benign conditions such as an infection or prostate enlargement.



Risk Factors: Incidence increases with age. In the U.S., over 70% of prostate cancers are diagnosed after age 65. Men with a family history of prostate cancer have a higher risk of developing prostate cancer (5-10% of prostate cancers). Unfortunately, little else is known about the risk factors associated with prostate cancer. High calcium intake, primarily through supplements, is linked to an increased risk for more aggressive types of prostate cancer. In addition to dairy products, consuming large quantities of red meat can increase one's risk. African American men have the highest prostate cancer incidence rates in the world. The disease is prevalent in Northwestern Europe and North America, with Asia and South America reporting lower rates. Dietary factors may explain these patterns. International studies have identified fat as a possible factor. A history of sexually transmitted disease, smoking, and vasectomy are among controversial risk factors for prostate cancer.

Prevention: No known method exists to prevent prostate cancer. Controlling and managing one's diet could help to reduce the risk. The possibility that some nutrients in foods,

such as vitamin E, selenium, and lucopene, may protect against prostate cancer is being investigated. Men should limit their intake of red meat and high-fat dairy products and eat at least five servings of fruits and vegetables daily.

Early Detection: For men 50 years or older and with a ten-year life expectancy, the American Cancer Society recommends that the Prostate-Specific Antigen (PSA) blood test and digital rectal examination of the prostate gland (DRE) should be part of their regular annual physical checkup. Other agencies (e.g. National Cancer Institute) do not support use of PSA screening. The PSA test is a blood test used to detect a substance made by the prostate called the prostate-specfic antigen. If either the PSA or DRE test is abnormal, further evaluation should be considered. Men should also be alert to the warning signs and symptoms and should see their physician if any occur. African American men and men who have a first-degree relative (father, brother, or son) diagnosed with prostate cancer at an early age are at a greater risk and should began testing at age 45. Men at even higher risk, due to multiple first-degree relatives affected at an early age, could begin testing at age 40. Depending on the results of this initial test, no further testing might be needed until age 45. Information should be provided to all men about what is known and what is uncertain about the benefits and limitations of early detection and treatment of prostate cancer so that they can make an informed decision about testing. The key to saving lives is early detection. The N.C. 2002 BRFSS Survey indicates that 62.4% and 73.4% of men over 40 years of age have had a PSA and DRE exam, respectively.

Treatment: After considering the age, the stage of the cancer, and other medical conditions of the patient, surgery and/or radiation should be discussed. For metastatic disease, options include radiation, hormone therapy, chemotherapy, or a combination thereof. Hormone treatment may control prostate cancer for long periods by shrinking the size of the tumor, thus relieving the pain and other symptoms. Because prostate cancers can be very slow growing, physicians may choose to observe the disease without immediate action, "watchful waiting." This approach may be appropriate for older men with low-grade and/or early-stage tumors.

Survival: Eight-five percent of all prostate cancers in North Carolina are discovered in the local and regional stages. In the U.S., the five-year relative survival rate for patients whose tumors are diagnosed at these stages is 100%. The survival rate for all stages combined has steadily improved, and in the past 20 years the rate has increased from 67% to 98%. Beyond five years, the survival rates steadily decrease. Eighty-four percent of men survive 10 years and 56% survive 15 years.

Prostate Cancer Control Activities

The Prostate Cancer Coalition of North Carolina (PCCNC) is a organization working towards the day when prostate cancer is no longer a threat in North Carolina. To accomplish this goal, PCCNC is actively involved in several cancer control programs throughout the state. One program in particular is the Prostate Cancer (PC) Shepherds Program. The purpose of the PC Shepherds Program is to develop and pilot a community-based action research initiative and delivery system to reduce the disparate impact of prostate cancer in African American communities in the Triangle Area (Durham, Orange, and Wake counties). The program will provide men with direct one-to-one access to a trained prostate cancer survivor (shepherd). With the assistance of the North Carolina Minority Prostate Cancer Awareness Action Team, the PC Shepherds Program was fully implemented by late 2003.

The North Carolina Minority Prostate Cancer Awareness Action Team is an independent, community-based group with a 10-year history of developing and delivering services targeting minority communities (particularly African American). The team is comprised of diverse volunteer professionals, some who are prostate cancer survivors. The Action Team is affiliated with the PCCNC and maintains a collaborative relationship with the American Cancer Society (ACS). The primary focus of the Action Team is one of education, awareness, advocacy, and support around the issue of prostate cancer. Additional information about the Action Team can be obtained from a local ACS Resource Center (see page 50). For more information about PC Shepherds Program, PCCNC, and a list of prostate cancer support groups, visit http://www.pccnc.org or call (919) 881-8440.

Duke's Comprehensive Cancer Center participates in a National Institutes of Health study aimed at improving health behavior. Project LEAD (**L**eading the Way in **E**ducation **A**gainst **D**isease) is a six-month home-based study whose participants were diagnosed with either breast or prostate cancer in the past 18 months. Participants must be 65 years or older. For more information about Project LEAD call 1-877-239-1054 or email lead@geri.duke.edu.

Duke University and the Department of Veterans Affairs are conducting a study to improve the health of prostate and breast cancer survivors in North Carolina and Virginia. The study will determine how a low-fat diet and exercise affect prostate and breast cancer recurrence in whites and African Americans. To learn more about this study, talk with a physician or contact Duke at 1-888-ASK-DUKE.

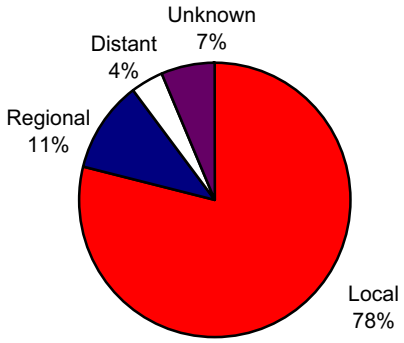
A study to determine the impact of fat and flaxseed-modified diets on prostate cancer is also in progress at Duke University. Participants are self-referred or recruited from Duke University Hospital or Durham Regional. For more information, contact a physician or call 1-888-ASK-DUKE.

With a $5 million grant awarded by Wake Forest University Baptist Medical Center, the Comprehensive Cancer Center of Wake Forest University established the Prostate Cancer Center of Excellence on January 1, 1999. The goal of the Prostate Cancer Center for Excellence is to propel the Cancer Center toward national stature as a center for innovative research and treatment. The Prostate Center conducts research focused on chemoprevention, identifies men at high risk for disease or for its recurrence, and develops new therapies for men with existing prostate cancer.

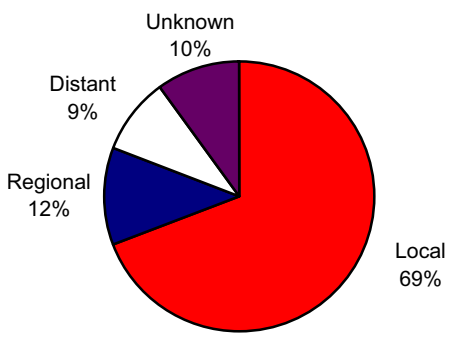
The Carolina Prostate Cancer Study will examine racial differences in prostate cancer treatment outcomes (rates of impotence and incontinence after surgery or radiation), and look at how health care access, economic issues, and screening attitudes affect mortality. Patients must be enrolled within 90 days of initial treatment and be 40 years or older. The Lineberger Comprehensive Cancer at the University of North Carolina at Chapel Hill is the research institution heading the study in 33 North Carolina counties. For additional information about the Prostate Study, talk with a physician or call 1-877-696-5787.

The North Carolina-Louisiana Prostate Cancer Study is a joint effort to explore factors that affect the severity of the disease at diagnosis. One thousand participants in North Carolina and 1,000 in Louisiana will be interviewed at home; blood, toenails, and tumor samples will be examined. Participants can be no older than 75 years old. Contact a doctor for more information.

1996-2000 Percentage of White Prostate Cancer Cases at Stage of Diagnosis, North Carolina

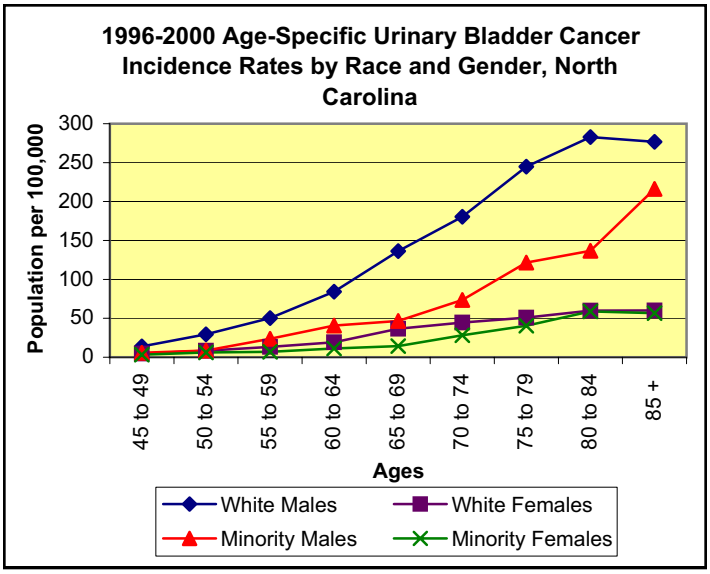


1996-2000 Percentage of Minority Prostate Cancer Cases at Stage of Diagnosis, North Carolina



Urinary Bladder

Incidence: In North Carolina, 1,690 new cases of bladder cancer are expected in 2004 (1,240 in men and 450 in women). The incidence rate among men is four times higher than in women; therefore, bladder cancer is the fifth most common cancer in men and ninth in women. From 1996 to 2000, the incidence rate among whites is two times higher than among African Americans in North Carolina.



Mortality: For 2004, 345 bladder cancer deaths are predicted for North Carolina. Gender patterns follow those for incidence. Higher bladder cancer rates in coastal counties have led to research of drinking water contaminants. In the 1970s and 1980s, mortality rates for whites and African Americans decreased substantially. During the 1990s the rates for the white and African American populations in North Carolina have remained constant.

Warning Signals: Blood in the urine; usually associated with increased frequency in urination.

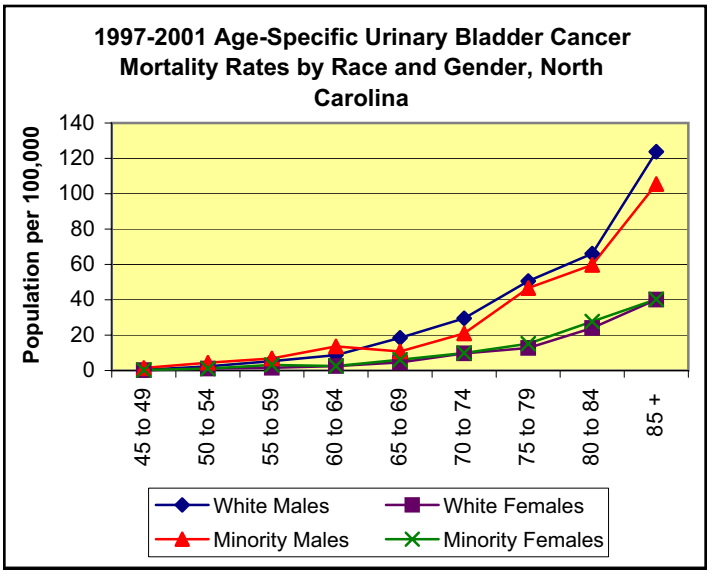
Risk Factors: Cigarette smoking is the greatest risk for bladder cancer. Smokers experience twice the risk of nonsmokers. Occupational hazards (e.g., paints, aniline and azo dyes) are well-documented risk factors for bladder cancer. Truck drivers and individuals working in the textile, rubber, metal, and leather industries appear to be more susceptible. An individual's diet, in particular coffee drinking, can be a factor. Clustering in families and occupational clusters have been reported.

Prevention: Drinking more fluids, especially water, and eating more vegetables may lower the risk of bladder cancer.

Early Detection: Bladder cancer is diagnosed by an examination of the cells found in the urine and an examination of the bladder wall with a cystoscope, a slender tube fitted with a lens and light that can be inserted into the tract of the urethra and up into the bladder.

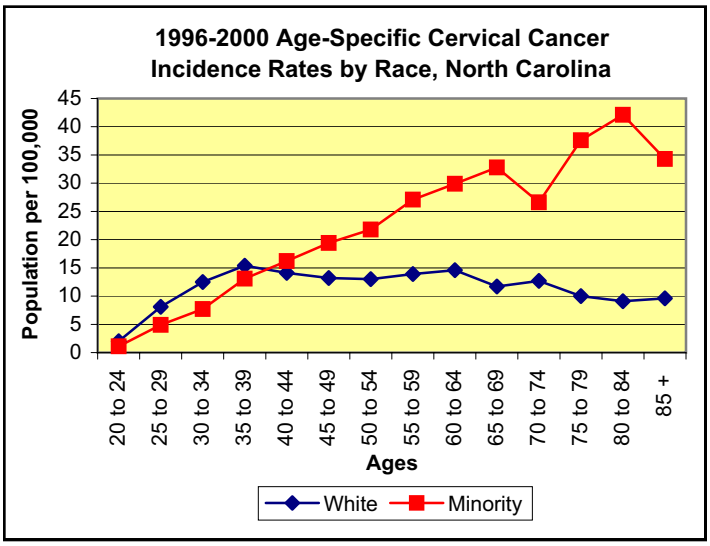
Treatment: Surgery, alone or in combination with other treatments, is used in over 90% of cases. Chemotherapy with or without radiation before cystectomy (bladder removal), has improved some treatment results.

Survival: When detected at an early stage, the five-year survival rate for bladder cancer is 94% in the U.S. Fortunately, 87% of North Carolina bladder cancer cases are diagnosed in the early stages. For regional and distant disease the survival rates are 48% and 6%, respectively.



Uterine Cervix

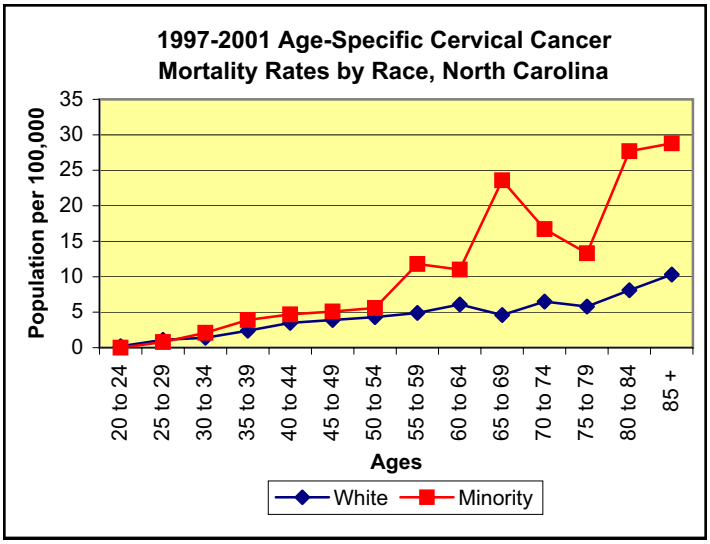
Incidence: An estimated 380 new invasive cervical cancer cases are projected for North Carolina in 2004. For several decades, incidence rates have steadily declined. With Pap tests occurring more often, pre-invasive lesions of the cervix are detected far more frequently than invasive cancer. The majority of the *in situ* cases will be in African American women under age 40, while many invasive cases will be among white women over 65.



Mortality: Approximately 135 women are projected to die from cervical cancer in 2004; the majority (77%) will be women over the age of 45. From the 1990s to the present, mortality rates have remained constant for white females but have declined slowly but steadily for minority females.

Warning Signals: Symptoms usually do not appear until abnormal cervical cells become cancerous and invade nearby tissues. When this happens, abnormal vaginal bleeding is the most common symptom. Other symptoms include unusual vaginal discharge or bleeding between menstrual periods, after menopause, or during sexual intercourse, douching, or a pelvic exam. Pain and systemic symptoms are late symptoms of the disease.

Risk Factors: Engaging in sex at an early age or having multiple sexual partners raise the risk of cervical cancer. Also, women whose partners became sexually active at an early age, had many sexual partners, or had a previous partner with cervical cancer are also at an increased risk. Sexually transmitted diseases, in particular certain types of human papilloma virus, are linked to cervical cancer. Smoking and long-term use of oral contraceptives may also increase the risk. The risk of dying from cervical cancer is not the same as the risk of cervical cancer incidence, especially *in situ* diagnoses. Due to screening programs directed at younger age groups, these frequently screened women are much less likely to die from cervical cancer. The risk of cervical cancer mortality is greater among women who are screened infrequently — older, rural, African American, or poor women.



Early Detection: The Pap test is a valuable, simple procedure that can be performed at appropriate intervals by health care professionals as part of a pelvic exam. A small sample of cells is collected from the cervix using a wooden scraper or a small brush, then transferred to a slide and examined under a microscope. Screening should begin about three years after a woman becomes sexually active, but no later than age 21. Screening should be preformed annually with regular Pap tests or every two years using liquid-based tests. Women 30 years and older with three consecutive normal findings should have the Pap test performed every two to three years. At the physician's discretion, more frequent screenings may occur if certain risk factors exist, such as HIV infection, or a weakened immune system. Fewer Pap tests can be given to women age 70 and older with several recent normal Pap tests. Most women who have had a total hysterectomy do not need continued screenings.

Treatment: Cervical cancers are generally treated with surgery or radiation, or both, as well as chemotherapy. In pre-cancerous stages, changes in the cervix may be treated by cryotherapy (the destruction of cells by extreme cold), by electrocoagulation (the destruction of tissue through intense heat by electric current), by laser ablation, or by local surgery.

Survival: For the U.S., if the disease is *in situ*, the rate of survival is almost 100%. Eighty-nine percent of cervical cancer patients survive one year after diagnosis, and 82% live five years. For patients diagnosed at a local stage, the five-year relative survival rate is 94%. Fifty-six percent of invasive cervical cancers among white women and 46% of cancers among African American women are diagnosed at a localized stage. If the cancer is diagnosed in the regional and distant stages, the five-year relative survival rates are 48% and 6% respectively.

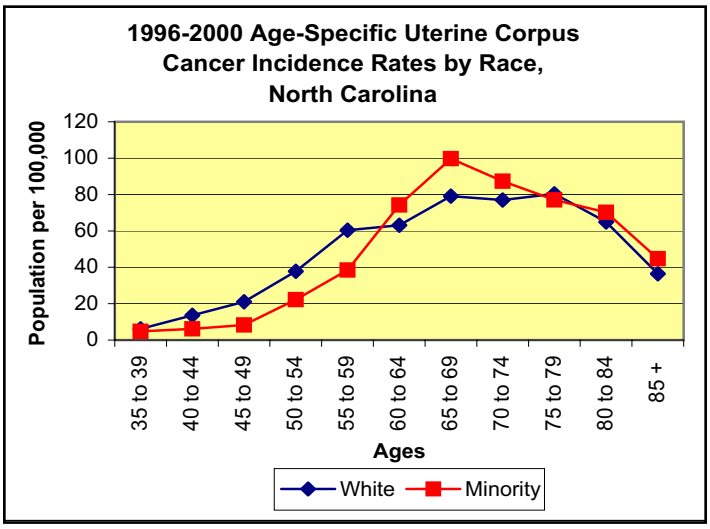
Cervical Cancer Control Activities

Research is currently underway in North Carolina related to cervical cancer. One program currently in progress at the Comprehensive Cancer Center at Wake Forest University seeks to understand why women do not obtain follow-up care for abnormal Pap smear results. This primarily targets Native American and non-white racial groups.

Uterine Corpus (Endometrium)

Cancer of the uterine corpus is the most common gynecological cancer.

Incidence: About 1,150 new cases of cancer of the uterine corpus (body of the uterus), usually of the endometrium (lining of the uterus), are expected for 2004 in North Carolina. After increasing nationally between 1988 and 1998 at rate of 0.6% yearly, endometrial cancer incidence rates leveled off in 2000. Incidence rates in North Carolina from 1996 to 2000 among white women (17.3 per 100,000) are higher than in African American women (15.6 per 100,000) and every other racial and ethnic group.



Mortality: In 2004, approximately 195 North Carolina women will lose their lives to uterine corpus cancer. Although North Carolina's African American women have lower incidence rates, their mortality rates are more than two times higher than among white women.

Warning Signals: Bleeding outside of the normal menstrual cycle or after menopause, or unusual vaginal discharge. Pain and systemic symptoms are late symptoms.

Risk Factors: High cumulative exposure to estrogen is the major risk factor for endometrial cancer, the most common type of uterine cancer. Estrogen-related exposures include estrogen replacement therapy, tamoxifen, early menarche, late menopause, a history of failure to ovulate, and never being pregnant have all been shown to increase risk. Research has not implicated estrogen exposures in the

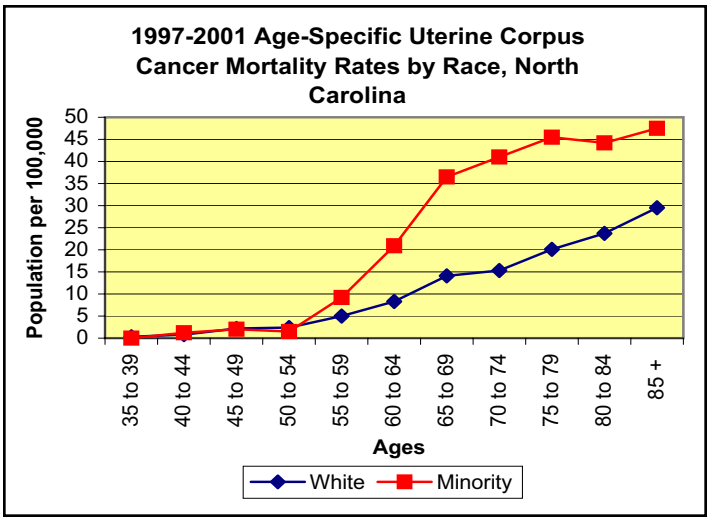
development of the other types of uterine corpus cancer, which are more aggressive and have a poorer prognosis. Other risk factors include infertility, diabetes, gall bladder disease, hypertension, and obesity. Hereditary non-polyposis colon cancer (HNPCC), a genetic syndrome, also has been associated with endometrial and ovarian cancers.

Prevention: Women should maintain a healthful weight and incorporate some sort of physical activity, like walking or aerobics, into their daily routine. Pregnancy and the use of oral contraceptives appear to provide protection against endometrial cancer.

Early Detection: Fortunately, most endometrial cancer is diagnosed at an early stage because of post-menopausal bleeding. Beginning at age 35, women with or at risk for HNPCC should be offered endometrial biopsy annually to screen for endometrial cancer.

Treatment: Depending on the stage, treatment for uterine cancers includes surgery, radiation, hormones and/or chemotherapy. Pre-cancerous endometrial changes may be treated with progesterone.

Survival: In the U.S., the one-year relative survival rate for endometrial cancer is 94%. The five-year relative survival rates are 96%, 65%, and 26% if the cancer is diagnosed at local, regional, and distant stages, respectively. In North Carolina, 72% of uterine corpus cancers are detected at an early stage. Relative survival rates for whites exceed those for African Americans by at least 15 percentage points at every stage.



Cancer of Other Sites

Incidence: The remaining cancers are divided among 30 sites and are extremely rare. The 12 sites already discussed account for slightly more than 78% of all cancer in North Carolina. An estimated 9,030 new cancer cases are expected to occur in the remaining sites in North Carolina in 2004. (See page 10 for a listing of other cancer sites.)

Mortality: Most of these cancers are quite fatal, accounting for 28% of the cancer deaths among North Carolinians in 2001. However, some, like thyroid and larynx cancers, are curable when detected early.

Warning Signals: Be alert to changes in the body and its usual patterns. Warning signals that may indicate cancer are: a change in bowel or bladder habits; a sore that does not heal; unusual bleeding or discharge; a thickening or lump in the breast or any other part of the body; indigestion or difficulty swallowing; an obvious change in a wart or mole; and a nagging cough or hoarseness. These symptoms are not always warning signs of cancer; they could be caused by less serious conditions. If any of these symptoms occur, it is important to see a doctor. Only a doctor can determine whether a cancer exists.

Risk Factors: Some of the other cancers, especially brain, liver, and bone, may be associated with environmental risks. Smoking is a risk factor for nearly all cancers (e.g., stomach, nasal/pharynx, kidney).

Early Detection: Regular medical examinations, especially after age 40, are the best means for early detection. Unfortunately, some of the most thorough examinations may not detect the rare cancers. Therefore, a person should pay close attention to changes in the body and alert a doctor to these changes.

Treatment: Surgery, often combined with radiation therapy, is the most effective method for treating most cancers. Immunotherapy and chemotherapy may be beneficial for some cancers.

Survival: Survival is variable. Early detection and appropriate treatment are the best means to surviving all cancers.

Percentage of 2000 Cancer Cases and 2001 Deaths by Gender, North Carolina

Males		
Site	**Cases**	**Deaths**
Bladder	5.8%	2.2%
Brain, CNS	1.5%	2.1%
Colon and Rectum	11.3%	8.8%
Esophagus	1.5%	2.7%
Kidney	3.6%	2.9%
Leukemia	2.4%	3.7%
Liver	1.0%	2.5%
Lung and Bronchus	18.4%	35.6%
Malignant Melanoma (Skin)	3.8%	1.7%
Multiple Myeloma	1.2%	1.9%
Non-Hodgkin's Lymphoma	3.4%	3.8%
Oral Cavity	3.3%	1.4%
Pancreas	2.0%	5.0%
Prostate	29.8%	10.8%
Stomach	1.5%	2.0%
Other Cancers	9.5%	12.9%

Females		
Site	**Cases**	**Deaths**
Bladder	2.1%	1.3%
Brain, CNS	1.3%	2.2%
Colon and Rectum	11.0%	10.4%
Female Breast	37.9%	15.3%
Kidney	2.0%	1.8%
Leukemia	1.6%	3.6%
Lung and Bronchus	12.2%	24.8%
Malignant Melanoma (Skin)	3.1%	1.3%
Multiple Myeloma	1.1%	2.5%
Non-Hodgkin's Lymphoma	3.0%	3.8%
Oral Cavity	1.5%	1.0%
Ovary	3.8%	5.1%
Pancreas	1.8%	5.8%
Stomach	1.1%	2.1%
Uterine Cervix	2.2%	1.7%
Uterine Corpus (Endometrium)	4.8%	2.5%
Other Cancers	9.5%	14.8%

CANCER IN CHILDREN

Incidence: Cancer is a very rare childhood disease, with 14.1 cases per 100,000 children. The incidence rates are higher among whites than African Americans, 14.4 and 11.8, respectively. Between 1973 and 1991, incidence rates for childhood cancers increased by 10%. An estimated 240 new pediatric (under age 15) cancers will occur in North Carolina in 2004. About 16% of childhood cancers occur during the first two years of life. The most common cancers in children are leukemia, bone, lymph nodes, brain, kidney, and soft tissues.

Mortality: Approximately 45 children are predicted to die from cancer, one-third of them from leukemia, in North Carolina in 2004. Despite its rarity, cancer is the chief cause of death by disease for children between ages one and 14. Since 1975, nationwide mortality rates have decreased by 49%.

Risk Factors: The cause of most childhood cancers is unknown. Some of these cancers are the result of a familial predisposition (cancer runs in the family). Radiation exposure contributes to certain types of childhood cancers. Childhood cancers are not significantly related to lifestyle-related risk factors such as tobacco or alcohol use, poor diet, or not enough physical activity, like most cancers in adults.

Early Detection: Cancers in children can be difficult to recognize. Parents should see that their children have regular medical checkups and be alert to any unusual symptoms that persist. Symptoms include: unusual mass or swelling; unexplained paleness and loss of energy; sudden tendency to bruise; persistent, localized pain or limping; prolonged, unexplained fever or illness; frequent headaches, often with vomiting; sudden eye or vision changes; and excessive, rapid weight loss.

Some childhood cancers are:

- ***Leukemia*** accounts for 30% of cancers in children 14 years and younger (see page 20 for more information).
- ***Brain and intraspinal cancer*** in the early stages may cause headaches, blurred vision, dizziness, difficulty in walking or handling objects, and nausea. It accounts for 21% of childhood cancers.
- ***Neuroblastoma*** accounts for 7.3% of childhood cancers and is a cancer of the sympathetic nervous system that can appear anywhere, but usually in the abdomen, where a swelling occurs.
- ***Wilms' Tumor,*** a kidney cancer often recognized by a swelling or lump in the abdomen, accounts for 5.9% of childhood cancers.
- ***Non-Hodgkin's lymphoma and Hodgkin's disease***, accounting for 4.4% and 4.0% respectively, are cancers that involve the lymph nodes and that may invade bone marrow and other organs. Symptoms include swelling of lymph nodes in the neck, armpit,

Five-Year Survival Rates for Selected Cancers, Whites Under Age 15*

Cancer Site	WHITES UNDER AGE 15					
	1960-63^	1970-73^	1974-76^^	1977-79^^	1980-82^^	1983-90^^
All Sites	28.0	45.0	55.3	61.8	65.0	69.7
Acute Lymphocytic Leukemia	4.0	34.0	53.3	68.5	70.9	75.0
Acute Myeloid Leukemia	3.0	5.0	15.8	24.5	22.3	29.4
Bone & Joint	20.0	30.0	52.6	50.0	53.0	59.4
Brain & Nervous System	35.0	45.0	54.7	56.4	56.0	62.2
Hodgkin's Disease	52.0	90.0	80.2	84.6	91.1	89.5
Neuroblastoma	25.0	40.0	49.1	51.2	56.9	56.4
Non-Hodgkin's Lymphoma	18.0	26.0	43.2	49.2	58.5	72.0
Wilms' Tumor	33.0	70.0	74.2	80.1	83.2	87.6

Survival rates are expressed as percents.

* Long-term survival rates do not exist for all races combined, survival rates for whites only are shown.

^ Data for 1960-63 and 1970-73 are from three hospital registries and one state registry and appear in *Cancer Patient Survival Experience, 1980.*

^^ Data for 1974-90 are from SEER, and represent approximately 10 percent of the U.S. population. Thus, the earlier data and the SEER data are not strictly comparable, but each represents the best available data for the period covered.

Source: Surveillance, Epidemiology, and End Results, National Cancer Institute

or groin. General weakness or fever may occur.

- ***Rhabdomyosarcoma*** at 3.4% is the most common soft tissue sarcoma. Cancer can occur in the head and neck area, genitals, trunk, and extremities.
- ***Retinoblastoma*** (2.8%), an eye cancer, usually occurs in children under age four. When detected early, cure is possible with appropriate treatment.
- ***Osteosarcoma*** accounts for 2.7% of childhood cancers. It is a bone cancer that may cause no pain at first, but swelling in the area of the tumor is often a first sign.
- ***Ewing's Sarcoma*** is also a cancer of the bone and accounts for 1.8% of all childhood cancers.

Treatment: Childhood cancers can be treated by a combination of therapies. A team of experts, including oncologists, pediatric nurses, psychologists, social workers, and others who assist children and their families, works together to coordinate treatment. State-of-the-art pediatric care is available in five North Carolina cities: Chapel Hill, Charlotte, Durham, Greenville, and Winston Salem.

Survival: U.S. five-year survival rates vary considerably, depending on the site: all sites, 78%; acute lymphocytic leukemia, 85%; bone and joint, 72%; neuroblastoma, 68%; brain and central nervous system, 70%; Wilms' Tumor (kidney), 91%; and Hodgkin's disease, 94%.

Childhood Cancer Control Activities

In 2003, Duke University Medical Center received a $6 million donation from the Pediatric Brain Tumor Foundation of the United States (PBTUS) based in Asheville, NC. The donation will establish and fund a new institute at the Duke Comprehensive Cancer Center that is devoted exclusively to pediatric brain tumor research. The primary goal of the new Pediatric Brain Tumor Foundation Institute will be to develop innovative and less invasive clinical treatments for children diagnosed with brain tumors.

PBTUS is a national non-profit organization dedicated to supporting the search for the cause and cure of childhood brain tumors. In 1984, Mike and Dianne Traynor formed a program to met the dual goals of providing funds for research and educating the public about childhood brain tumors and about the great need for increased funding for basic research. The program, Ride for Kids®, exists today and continues to function as a grassroots effort by the motorcycling community of the United States. As a result of the success and growth of the Ride for Kids® program, the Traynors founded the Pediatric Brain Tumor Foundation of the United States in 1991. For more information about PBTUS or Ride for Kids®, call 1-800-253-6530 or visit their website at http://pbtfus.org or http://ride4kids.org.

Five Most Frequently Diagnosed Cancers by Age Group, North Carolina, 2000

Under Age 15		
Cancer Site	Cases	Rate*
Leukemia	67	4.1
Brain & Nervous System	60	3.6
Non-Hodgkin's Lymphoma	21	1.3
Kidney	13	0.8
Soft Tissue	12	0.7

Ages 15-19		
Cancer Site	Cases	Rate*
Leukemia	18	3.3
Hodgkin's Disease	15	2.8
Non-Hodgkin's Lymphoma	12	2.2
Brain & Nervous System	10	1.9
Malignant Melanoma (Skin)	**	**

Ages 20-24		
Cancer Site	Cases	Rate*
Malignant Melanoma (Skin)	40	6.9
Testes^	26	8.6
Hodgkin's Disease	23	4.0
Endocrine	12	2.1
Brain & Nervous System	12	2.1

Ages 25-29		
Cancer Site	Cases	Rate*
Malignant Melanoma (Skin)	43	7.1
Endocrine	33	5.5
Female Breast^	27	9.2
Testes^	24	7.8
Hodgkin's Disease	21	3.5

Ages 30-34		
Cancer Site	Cases	Rate*
Female Breast^	109	36.0
Malignant Melanoma (Skin)	67	10.9
Testes^	45	14.5
Colon and Rectum	30	4.9
Uterine Cervix^	29	9.6

Ages 35-39		
Cancer Site	Cases	Rate*
Female Breast^	243	73.8
Malignant Melanoma (Skin)	69	10.5
Uterine Cervix^	49	14.9
Colon and Rectum	45	6.9
Endocrine	43	6.6

Ages 40-44		
Cancer Site	Cases	Rate*
Female Breast^	467	145.6
Lung and Bronchus	132	20.9
Colon and Rectum	111	17.6
Malignant Melanoma (Skin)	78	12.3
Non-Hodgkin's Lymphoma	65	10.3

Ages 45-49		
Cancer Site	Cases	Rate*
Female Breast^	656	224.1
Lung and Bronchus	200	35.1
Colon and Rectum	177	31.0
Malignant Melanoma (Skin)	104	18.2
Prostate^	98	35.3

Ages 50-54		
Cancer Site	Cases	Rate*
Female Breast^	785	296.8
Lung and Bronchus	383	74.4
Prostate^	345	137.8
Colon and Rectum	308	59.8
Malignant Melanoma (Skin)	115	22.3

Ages 55-59		
Cancer Site	Cases	Rate*
Female Breast^	852	409.9
Prostate^	593	308.3
Lung and Bronchus	557	139.2
Colon and Rectum	342	85.5
Kidney	126	31.5

Ages 60-64		
Cancer Site	Cases	Rate*
Prostate^	857	563.4
Female Breast^	758	442.3
Lung and Bronchus	747	203.9
Colon and Rectum	456	141.0
Bladder	136	42.0

Ages 65-69		
Cancer Site	Cases	Rate*
Prostate^	1,069	829.3
Lung and Bronchus	841	297.3
Female Breast^	726	471.6
Colon and Rectum	501	177.1
Bladder	188	66.5

Ages 70-74		
Cancer Site	Cases	Rate*
Prostate^	1,024	943.2
Lung and Bronchus	978	389.7
Female Breast^	718	504.3
Colon and Rectum	561	223.6
Bladder	247	98.4

Ages 75-79		
Cancer Site	Cases	Rate*
Lung and Bronchus	781	387.7
Prostate^	673	843.8
Female Breast^	576	473.3
Colon and Rectum	553	274.5
Bladder	214	106.2

Ages 80-84		
Cancer Site	Cases	Rate*
Colon and Rectum	394	306.9
Lung and Bronchus	394	306.9
Female Breast^	383	456.2
Prostate^	248	558.4
Bladder	173	134.8

85 and Older		
Cancer Site	Cases	Rate*
Colon and Rectum	317	300.6
Female Breast^	215	275.3
Lung and Bronchus	178	168.8
Prostate^	159	581.0
Bladder	105	99.6

* Rates per 100,000 Population.

** Rates based on counts of less than 10 are unstable and therefore suppressed.

^ Sex-specific populations are used to calculate rates for sex-specific cancers.

AMERICAN CANCER SOCIETY RECOMMENDATIONS FOR EARLY DETECTION OF CANCER IN ASYMPTOMATIC PEOPLE

Site	Recommendation
Breast	Women 40 years and older and in good health should have an annual mammogram. A clinical breast examination (CBE) should be given every three years for women in their 20s and 30s, and yearly for women 40 and older. Women should know how their breasts normally feel and report any breast change promptly to their health care provider. A breast self-examination is an option for women in their 20s. Women at increased risk (e.g., family history, genetic tendency, past breast cancer) should talk with their doctors about the benefits and limitations of starting mammography screening earlier, having additional tests (e.g., breast ultrasound and MRI), or having more frequent exams.
Colon and Rectum	Beginning at age 50, men and women should follow one of the examination schedules below: • Fecal occult blood (FOBT) test every year, or • Flexible sigmiodoscopy (FSIG) every five years, or • Annual FOBT and FSIG every five years.* • Double-contrast barium enema every five years. • Colonoscopy every ten years. * Combined testing is preferred over either an annual FOBT or FSIG every five years. People who are at moderate or high risk for colorectal cancer should talk with a doctor about a different testing schedule.
Prostate	The PSA test and the digital rectal examination should be offered annually, beginning at age 50, to men who have a life expectancy of at least 10 years. Men at high risk (African American men and men with a strong family history of one or more first-degree relatives with prostate cancer at an early age) should begin testing at age 45. Men at average or high risk should be provided with information about what is known and what is uncertain about the benefits and limitations of early detection and treatment of prostate cancer, so that they can make an informed decision.
Uterus	*Cervix:* Screenings should start three years after a woman begins having vaginal intercourse, but no later than age 21. Screening should be preformed annually with regular Pap tests or every two years using liquid-based tests. Women 30 years and older with three consecutive normal findings should be screened every two to three years. At the physician's discretion, more frequent screenings may occur if certain risk factors, HIV infection or a weakened immune system, exist. Women age 70 and older with three or more consecutive normal Pap tests in the last 10 years may choose to stop cervical cancer screenings. Screenings after total hysterectomy are not necessary unless the surgery was done as treatment for cervical cancer. *Endometrium:* All women should be informed about the risks and symptoms of endometrial cancer, and strongly encouraged to report any unexpected bleeding or spotting to their physicians. Annual screening for endometrial cancer with endometrial biopsy beginning at age 35 should be offered to women with or at risk for hereditary nonpolyposis colon cancer (HNPCC).
Cancer-related Checkup	For individuals undergoing periodic health examinations, a cancer-related check-up should include health counseling, and depending on a person's age, might include examinations for cancers of the thyroid, oral cavity, skin, lymph nodes, testes, and ovaries, well as for some nonmalignant diseases.

The five-year relative survival rate for people with cancers for which the ACS has specific early detection recommendations is about 82%. The outlook for survival for people with these cancers is greatly improved by early detection. If all Americans had early detection testing according to ACS recommendations, the five-year relative survival rate for people with these cancers would increase to about 95%.

CANCER TREATMENTS

Trying to understand all the different types of cancer treatments available can be difficult and somewhat overwhelming. This section describes of the most common treatment methods used to treat cancer and gives a brief introduction to alternative therapies.

Surgery

Surgery is the oldest form of treatment for cancer. It is important in diagnosing and staging the cancer. Advances in surgical techniques have allowed surgeons to successfully operate on a growing number of patients. Today, less invasive operations are often done to remove tumors and to try to preserve as much normal function as possible. Surgery offers the greatest chance for cure for many types of cancer, especially those that have not yet spread to other parts of the body. Most people with cancer will have some type of surgery.

A person's experience with surgery can depend on many factors, including the disease being treated, the type of operation being performed, and the person's overall health. There are probably as many different surgical techniques as there are diseases to treat, so remember each case is different.

Chemotherapy

Since the early 1950s, chemotherapy has helped patients. Chemotherapy means taking drugs or medicines to treat a disease such as cancer. Medical terms often used to describe cancer chemotherapy are antineoplastic (anticancer) and cytotoxic (cell-killing). Chemotherapy drugs may be taken before or after surgery, with radiation treatment, or alone. Most chemotherapy drugs are given in one of the following ways:

- by mouth; if chemotherapy is a pill, just take as prescribed.
- through a shot. Shots may be given in a doctor's office, a hospital, a clinic, or at home.
- intravenously; drugs are injected into the veins through a needle (IV injection).

Chemotherapy is sometimes the first choice for treating many cancers. It differs from surgery or radiation in that it is almost always used as a systemic treatment. This means the medicines travel throughout the whole body or system rather than being confined or localized to one area such as the breast, lung, or colon. This is important because chemotherapy can reach cancer cells that may have spread to other parts of the body. Chemotherapy may be taken once a day, once a week, or even once a month, depending on the type of cancer and the chemotherapy taken.

Radiation

Radiation is energy that is carried by waves or a stream of particles that can alter the genetic code of a cell. This genetic code controls how a cell grows and divides in the body. Radiation therapy attacks reproducing cancer cells, but it can also affect reproducing cells of normal tissues. The damage to normal cells is what causes side effects. Each time radiation therapy is given, it involves a balance between destroying the cancer cells and sparing the normal cells. Radiation used for cancer treatment is called ionizing radiation because it forms ions as it passes through tissues and dislodges electrons from atoms. Ions are atoms that have acquired an electric charge through the gain or loss of an electron. Ionization, in turn, can cause cell death or a genetic change.

Radiation is considered a local treatment because only cells in the area being treated are affected. Radiation may be used in early-stage cancers to cure or control the disease. It can be used before surgery to shrink the tumor or after surgery to prevent the cancer from coming back. Radiation may be used to treat symptoms such as pain caused by the cancer that has spread from the original site. In certain types of cancer it may be used along with surgery and/or chemotherapy.

Immunotherapy

Some oncologists (cancer doctors) consider immunotherapy the fourth method for treating cancer (surgery, radiation, and chemotherapy are the three most common methods). Immunotherapy uses certain parts of the immune system to fight disease. This can include stimulating the patient's immune system to work harder, or using an outside source such as man-made immune system proteins. Other terms used to describe immunotherapy include biologic response modifiers and biologic therapy.

Immunotherapy can be used alone, but it is most often used as an adjuvant (along with or after another type of therapy) to add to the anticancer effects of the main therapy. Although the thought of using one's own immune system to fight cancer is appealing, immunotherapy currently has a small role in treating the most common types of cancer. In general, immunotherapy is most likely to be effective when treating small cancers and will probably be less effective for more advanced disease. Researchers, however, have made important progress in this field in the past few years. Many are optimistic that more effective immunotherapies can be developed that will have a greater impact on the outlook for people with cancer.

Clinical Trials

Clinical trials — research studies in people — are needed to explore new ways to treat people with cancer. Studies are conducted when there is a reason to believe a new drug, treatment option, or a combination of drugs and/or treatment option may be of value in curing or controlling cancer. Doctors conduct clinical trials to learn whether a new treatment is safe and effective. The doctors in charge of the study do not know ahead of time how things will turn out. Because of the unknowns, there is no simple answer to the question, "*Should I take part?*"

Researchers will fully explain to a prospective participant and family what is required. A person always has the chance to refuse to take part in the study. Being in a clinical trial does not keep that person from getting other medical or nursing care that may be needed.

The decision to participate in a study is a very personal one. It depends on many factors, including the benefits and risks of the study, what the person hopes to achieve by taking part, and other personal preferences. While there is no right or wrong choice, knowing all one can about clinical trials in general can help a person feel more at ease about making a decision.

The National Cancer Institute sponsors the majority of government-funded cancer clinical trials and maintains a database of nearly 1,800 active studies (those enrolling patients), as well as some privately funded studies. The database can be accessed by visiting their website at http://www.cancer.gov or calling 1-800-4-CANCER. The National Institutes of Health maintains an even larger database of clinical trials at http://www.clinicaltrials.gov.

Complementary and Alternative Therapies

The terms *alternative* or *complementary* are used to refer to non-traditional methods of diagnosing, preventing, or treating cancer. *"Alternative"* refers to treatments that are promoted as cancer cures. They are unproven because they have not been scientifically tested, or were tested and found to be ineffective. If used instead of evidence-based treatment, the patient may suffer, either from lack of helpful treatment or because the alternative treatment is actually harmful. *"Complementary"* refers to supportive methods that are used to complement, or add to, mainstream treatments. Examples might include meditation to reduce stress, peppermint tea for nausea, and acupuncture for chronic back pain. Complementary methods are not given to cure disease, rather they may help control symptoms and improve well-being. Some of the methods that are categorized as complementary, such as massage therapy, yoga, and meditation, have actually been referred to as supportive care in the past.

Many people with cancer use one or more kinds of alternative or complementary therapies. Often they are reluctant to tell their doctors about their decision. The best approach is to look carefully at your choices. Talk to your doctor about any method you are considering. There are many complementary methods you can safely use along with standard mainstream treatment to help relieve symptoms or side effects, to ease pain, and to help you enjoy life more. Here is a partial list of some complementary methods that some people have found helpful when used along with medical treatment:

- ***Body, mind, and spirit***: a good attitude and healthy spirit may have positive physical effects. Therapies include aromatheraphy, holistic medicine, meditation, support groups, and tai chi;
- ***Manual healing and body touch*** consists of acupuncture, chiropractic, massage, reflexology, and other non-traditional therapies;

- ***Herbs, vitamins, and minerals***;
- ***Diet and nutrition*** includes dieting, fasting, and other dietary practices; and
- ***Pharmacological and biological treatments***: non-traditional therapies such as bovine cartilage, homeopathy, and melantonin used to stop or slow the growth of cancer cells.

Remember, an important and essential part of treatment is communication. A good relationship between patient and doctor is pertinent for good health care. Do not be afraid to ask questions and address concerns openly without hesitation. Each must be able to communicate with the other so that the needs of the patient are met.

For additional information about these cancer treatments talk to a physician, contact a local ACS Resource Office (see page 51), or visit the ACS website at http: //www.cancer.org.

CANCER CONTROL

Cancer accounts for 23% of the deaths in North Carolina. Many of these deaths are preventable through the adoption of healthy behaviors. Together, state agencies, the American Cancer Society, university-based cancer control programs, and the cancer outreach programs in community hospitals work toward a broad-based and sound cancer control effort in North Carolina. This section describes the cancer control programs and activities of the Division of Public Health of the North Carolina Department of Health and Human Services (DHHS).

State Center for Health Statistics

The State Center for Health Statistics (SCHS) is responsible for collecting data, research, producing reports, and maintaining a comprehensive collection of health statistics. The State Center provides:

- information and data to monitor the health of North Carolinians;
- analyses of important health issues, such as birth defects and infant mortality statistics;
- a central collection site for information about cancer, birth defects, births, deaths, marriages, and divorces;
- accurate and timely information for use in setting health policy, planning prevention programs, directing resources, and evaluating the effect of health programs and services; and
- a secure environment for storing confidential records.

The information provided by the State Center enables state legislators, state agencies, health professionals, and others make better informed decisions and enact effective health policies, with the goal of improving the health of all North Carolinians.

North Carolina Central Cancer Registry

In 1986, North Carolina became the 37th state to begin a registry to collect and analyze cancer data. The Central Cancer Registry (CCR) is located in the State Center for Health Statistics and operates under the authority granted in the North Carolina General Statute 130A-208.

The CCR collects, analyzes, and disseminates information on all new cancer cases, cancer treatment, and cancer deaths in North Carolina with respect to demographic and medical characteristics, such as, name, age, race, sex, address, occupation, Social Security and medical record numbers, anatomic site of cancer, the tumor's cell type, cancer stage, physician, and first course of treatment. The CCR serves and works with health care providers, researchers, health planners, policy makers, and the general public. The Registry responds to questions and concerns, publishes facts about cancer in North Carolina, monitors cancer trends by looking for problems in specific groups or communities, and supports cancer research to find causes and cures that may save lives in the future. The data collected support cancer program planning and policy-making, evaluation efforts, public information, education, and research.

The CCR is committed to preserving the confidentiality of information obtained for medical, educational, research, and statistical purposes. Thus, the Registry demands strict confidentiality and the protection of the identity of both cancer patients and reporting sources in registry data.

Statistics for North Carolina cited in this report are based on data processed by the CCR staff. In addition to this publication, the Registry produces *Cancer Incidence in North Carolina, Cancer Profiles,* pamphlets informing patients and the public about the CCR and reporting requirements, and statistical briefs that focus on cancer and its impact in North Carolina. The Registry maintains a close relationship with the American Cancer Society (ACS), the Centers for Disease Control and Prevention (CDC), the North American Association of Central Cancer Registries (NAACCR), the Comprehensive Cancer Centers of North Carolina, other state and federal agencies, out-of-state cancer registries, state hospitals, universities, and researchers. CCR's publications, statistics, and other information can be obtained by calling (919) 715-2117, visiting the website at http://www.schs.state.nc.us/SCHS/CCR or by e-mail, ccrinfo@ncmail.net.

Behavioral Risk Factor Surveillance System

To monitor key health behaviors, the Division of Public Health, in conjunction with the national Centers for Disease Control and Prevention (CDC), conducts the Behavioral Risk Factor Surveillance System (BRFSS) survey. The BRFSS survey is a random telephone survey of state residents aged eighteen and older in households with telephones. BRFSS was initially developed in the early 1980s by CDC in collaboration with state health departments and is currently conducted in all fifty states, the District of Columbia, and three U.S. territories. The Division of Public Health has participated in the survey since 1987. Through BRFSS, information is collected in a routine, standardized manner at the state level on a variety of health behaviors and preventive health practices related to the leading causes of death and disability; these includes cardiovascular disease, cancer, diabetes, and injuries. BRFSS interviews are conducted monthly and data are analyzed annually (on a calendar-year basis). For more information about North Carolina BRFSS, visit their website at http://www.schs.state.nc.us/SCHS/data/brfss.cfm.

Chronic Disease and Injury Section

The Chronic Disease and Injury Section is dedicated to improving the health of North Carolinians and "*Promoting a Healthy Community.*" To achieve this goal, the Chronic Disease and Injury Section is divided into nine branches and offices that focus on a particular population, disease, health, nutrition, or social issue. Several branches work toward controlling cancer in North Carolina.

Cancer Prevention and Control Branch

The goal of the Cancer Prevention and Control Branch is to develop and implement effective strategies to prevent, detect and control cancer and to promote activities which enhance comprehensive cancer initiatives. To fulfill its goal, the Control Branch:

- provides professional and public education to improve the ability of communities to prevent, detect or control cancer;
- provides funding for communities to conduct screening for the early detection of cancer and to assist with treatment services;
- promotes partnerships to deliver high-quality comprehensive cancer services; and
- collaborates with communities to foster cancer control through advisory councils and coalitions.

Within the Cancer Prevention and Control Branch, several programs and services ensure that these activities are carried out.

Advisory Committee on Cancer Coordination and Control: The Advisory Committee on Cancer Coordination and Control (ACCCC) was established in 1993 by the North Carolina General Assembly. The Advisory Committee is charged with recommending to the Secretary of DHHS a coordinated, comprehensive cancer control plan for the state. This responsibility includes:

- identifying and examining laws, regulations, programs and services related to cancer control;
- financing and providing access to cancer control services;
- developing cancer-related health promotion and disease prevention strategies; and
- recommending standards for cancer control services, training and technical assistance, monitoring and evaluation, and coordination of funding sources.

To meet these objectives, members meet quarterly and have organized four subcommittees, each one focusing on one of the following: (a) prevention; (b) early detection; (c) care; and (d) educational and legislative issues. Advisory members include a cabinet-level Secretary, the heads of North Carolina's Comprehensive Cancer Centers, four cancer survivors, representatives from North Carolina health organizations and institutions, and six state legislators. In June 2001, *The North Carolina Cancer Control Plan 2001-2006* was revealed to the public. The ACCCC is working to reduce cancer incidents and deaths and to enhance access to quality treatment and support services through educating and advising government officials, public and private organizations, and the general public. For more information about the ACCCC, visit their website, http://www.nccancer.org or call (919) 715-3341.

Cancer Control Program: The Cancer Control Program (CCP) was established by the General Assembly in 1945 under the Cancer Control Act of 1945 (General Statutes 130A-205) at the urging of the Women's Field Army (now the American Cancer Society) and the North Carolina Medical Society. The legislative purpose was "to establish and administer a program for the prevention and detection of cancer and for the care and treatment of persons with cancer," the first such program in the nation. The program was initially funded by the ACS. The CCP continues its mission of serving indigent cancer patients by covering medical care for eligible individuals who need inpatient or outpatient diagnostic and treatment services for cancer. The program achieves its goal of improving early detection of cancer and treatment for these patients through several mechanisms:

- direct payments to physicians and hospitals by Purchase of Medical Care Services (POMCS);
- contracts with outpatient cancer centers; and
- cancer prevention and screening programs through local health departments

Sixty-four percent of CCP's resources fund direct payments to physicians and hospitals by POMCS. Of the 1,507 North Carolinians that received diagnostic services and the 549 who received treatment services in fiscal year 2000, 90% were female and 34% were minorities. The primary diagnosis breakdown was: 19% breast, 59% cervical (including pre-cancerous conditions), 3% colon, 1% lung, 2% prostate, 2% skin and 14% other. Although income eligibility is set at 115% of the poverty level ($19,608 for a family of 4 for 2000), more than half of those served during fiscal year 2000 were below 85% of the federal poverty level.

To obtain additional information about the CCP, call (919) 715-3369 or view their website at: www.communityhealth.dhhs.state.nc.us/cancer/ccp.htm.

Breast and Cervical Cancer Control Program: With funding from the Centers for Disease Control and Prevention, North Carolina developed a comprehensive program for the early detection of breast and cervical cancer. Established in 1992, the Breast and Cervical Cancer Control Program (BCCCP) is based on the motto, "*Early Detection is the Best Prevention*," the backbone of BCCCP's education and screening effort. The program targets women age 50 to 64, especially ethnic minorities, who are at or below 200% of the federal poverty level and not enrolled in Medicare Part B. BCCCP's goals are

- to offer screening tests for breast and cervical cancer to eligible women;
- to promote the importance of quality screenings;
- to increase the number of eligible women being screened;
- to educate the public and health professionals about breast and cervical cancers;
- to identify breast and cervical cancer at an early stage;
- to collect and analyze data on breast and cervical cancer; and,
- to reduce the deaths from breast and cervical cancer in North Carolina women.

To achieve these goals, BCCCP in 1993 partnered with local health departments to ensure that eligible women in all 100 counties received screening and follow-up services. Since 1993,

- 57,305 women received screening services;
- 95,309 clinical breast exams and mammograms and 80,396 Pap smears were provided;
- 8,490 women with abnormal mammogram or clinical breast exams were followed-up with diagnostic tests and procedures;
- 1,326 women with abnormal Pap smear results received cervical colposcopies and biopsies;
- 517 cases of new breast cancer and 21 cases of invasive cervical cancer were detected. Nearly two-thirds of these cancers were detected at an early stage, thus increasing the chance for a positive outcome.

An average 14,703 screenings per year were provided from 1996 through 2000. Although BCCCP provided funds for specific tests and follow-up services, breast and cervical cancer treatment is not funded. Additional information about BCCCP can be obtained from local heath departments and by e-mail to pat.cannon@ncmail.net.

Tobacco Prevention and Control Branch

The North Carolina Tobacco Prevention and Control Branch is working to reduce deaths and health problems related to tobacco use and secondhand smoke. Sponsored Branch programs help partnering organizations and communities carry out effective, culturally appropriate strategies to

- Prevent youth tobacco use and access;
- Promote and support tobacco users to quit;
- Reduce disparities by improving health-related norms of special populations more adversely affected by tobacco use; and
- Promote smoke-free environments.

Several activities and programs have been sponsored to bring to the public's attention the importance of not smoking, the consequences of smoking and using smokeless tobacco, avenues and ways to become smoke- and tobacco-free, and information on teen tobacco use. Ten local coalitions serving 23 counties are responsible for carrying out programs at the community level. To learn more about the Tobacco Prevention and Control Branch and its programs, visit their website at http://www.communityhealth.dhhs.state.nc.us/tobacco.htm or call (919) 733-3215.

Physical Activity and Nutrition Branch

The goal of the Physical Activity and Nutrition Branch is to build healthy communities and promote healthful living, with emphases on physical activity and healthy diets. The Branch's primary activities include:

- helping organizations understand that their decisions can affect the community's health;
- designing and implementing programs that create healthful living and help to reduce the risk of diseases, and training communities to use them;
- analyzing policies and norms to determine the impact they have on choosing healthy behaviors;
- helping neighborhoods develop community organizational and advocacy skills to build and sustain healthy communities and productive citizens;
- partnering with health care providers, schools, workplaces, churches, community leaders and organizations to bring about changes in the community; and
- providing health education consultation, technical assistance and training services.

Additional information about the Physical Activity and Nutrition Branch and its programs can be obtained by calling (919) 733-9615 or visiting their website at http://www.eatsmartmovemorenc.com.

American Cancer Society

The American Cancer Society (ACS) is the nationwide community-based voluntary health organization dedicated to eliminating cancer as a major health problem by preventing cancer, saving lives from cancer, and diminishing suffering from cancer through research, education, advocacy, and service. To do this, the ACS has set challenge goals to be achieved by 2015. These goals are

- to reduce cancer mortality by 50%,
- to reduce cancer incidence by 25%, and
- to improve the quality of life for all cancer survivors.

These objectives are interdependent goals that require public and private collaborative partnerships and are the shared vision of the ACS, other public and private health organizations, corporations and community coalitions.

Scientific evidence suggests that about one-third of the 553,400 cancer deaths expected to occur this year in the U.S. will be related to unhealthy behaviors; 16,300 of those deaths are expected to occur in North Carolina. In addition to increasing healthy behaviors, many more lives could be saved if people took advantage of screenings to detect cancer at its earliest, most treatable stage. In fact, prevention through smoking cessation, better nutrition, and increased physical activity, as well as early detection through cancer screening examinations, are two of the most important and effective strategies for reaching the ACS goals.

The ACS of North Carolina has long advocated cancer control through cancer prevention, risk reduction, and early detection. Some of the many services the ACS provides will be discussed in this section.

College Scholarships

The American Cancer Society South Atlantic Division College Scholarship Program is designed to provide childhood cancer survivors with the opportunity to reach their academic potential and their career dreams by earning a college degree. Eligibility requirements include verification of a diagnosis of cancer **before** the age of twenty-one. The program gives childhood cancer survivors the opportunity to pursue a college degree from an accredited two- or four-year university, community college or vocational/technical school. Scholarships are awarded at a maximum of $1,000 annually and are based on the availability of funds.

Please contact the ACS South Atlantic Division to learn all the additional eligibility requirements.

Advocacy Efforts

An important part of the American Cancer Society's fight against cancer is sound public health policy. The ACS helps shape public policy regarding cancer-related matters and the rights of cancer patients at the local, state and national levels. In North Carolina that means advocating for government funding of cancer research, improved access to quality healthcare for all North Carolinians, championing the rights of cancer survivors, and shaping legislation regarding tobacco-related issues. Several victories were celebrated during the North Carolina 2003 legislative session.

Senate Bill 583 mandates that North Carolina Public School Systems promote a healthy teaching and learning environment by providing that public schools from kindergarten to grade 12 be tobacco-free. **Senate Bill 388**, an act that updated North Carolina's general statues, came as a response to recent medical advances in screening for the early detection of cervical cancer. These medical advances prompted the ACS to update its guidelines; as a result, the North Carolina General Assembly moved to meet the ACS's updated screening guidelines for early detection of cervical cancer. **Senate Bill 887** was also passed; it mandates that insurance companies cover women age 25 and older and at-risk patients screenings for ovarian cancer.

ACS Contribution in North Carolina

By funding groundbreaking research, the American Cancer Society has contributed to many important discoveries that have led to a better understanding of cancer and cancer treatment. Thirty-one research grants totaling $12,073,000 were in effect in North Carolina in 2003. The University of North Carolina at Chapel Hill received fifteen grants totaling $4,819,000; Duke University received nine grants totaling $3,146,500; Wake Forest University received four grants totaling $2,051,000; University of North Carolina at Wilmington, Research Triangle Institute, and East Carolina University each received one grant of $1,153,000, $716,00, and $187,500, respectively.

Resource Navigation for Patients

To reach the American Cancer Society 24 hours a day, call 1-800-ACS-2345. Someone will be there any time, day or night, to help and answer questions. Questions can also be submitted by e-mail at the ACS website, http://www.cancer.org.

Through 1-800-ACS-2345 the ACS can do much more than answer questions about specific types of cancer. They can help a person cope with day-to-day challenges through the Patient Navigation/Resource Center. The trained staff can help the person navigate through what can be a confusing maze of options. The staff will work to find the best possible help to fit the person's needs.

ACS staff can provide additional information about the American Cancer Society support programs…***I Can Cope, Reach to Recovery, Look Good-Feel Better, Road to Recovery and Man to Man***. The staff can also provide information on other resources in the community that address the issues of insurance, transportation, financial, medication and other support issues.

The ACS's ***Hope Lodges*** directly answer critical financial, emotional and access-to-care needs of cancer patients and their family members as they undergo outpatient cancer treatment away from home. Hope Lodges provide a warm and caring "home-away-from-home" environment free-

of-charge to cancer patients and their loved ones, for as long as needed during outpatient treatment. In May 2002, a Hope Lodge opened in Greenville, North Carolina.

ACS will work for cancer patients to find the help they need. The staff is available for patients, their families, their caregivers, and their community from the time of diagnosis throughout the entire continuum of the cancer experience.

DIET AND NUTRITIONAL GUIDELINES FROM THE AMERICAN CANCER SOCIETY

1. Eat a variety of healthful foods, with an emphasis on foods from plant sources.

- Eat five or more servings of fruits and vegetables each day;
- Choose whole grain rice, bread, pasta, and cereals;
- Limit the amount of refined carbohydrates consumed, including pastries, sweetened cereals, soft drinks, and sugars;
- Limit consumption of red meats, especially those high in fat and processed; choose fish, poultry, or beans

  as an alternative to beef, pork, and lamb;
- Prepare meat by baking, broiling, or poaching, rather than by frying or charbroiling (grilling); and
- Choose foods that help maintain a healthful weight.

2. Adopt a physically active lifestyle.

- ***Adults***: Engage in at least a moderate activity for 30 minutes or more on five or more days of the week; 45 minutes or more of moderate to vigorous activity on five or more days per week may further enhance reductions in the risk of breast and colon cancer.
- ***Children and Adolescents***: Engage in at least 60 minutes per day of moderate to vigorous physical activity at least five days per week.

3. Maintain a healthful weight throughout life.

- Balance caloric intake with physical activity;
- Lose weight if currently overweight or obese; and
- Remember that obesity and being overweight are associated with an increased risk of developing several types of cancers:

Breast (among postmenopausal women)
Colon
Endometrium
Esophagus
Gallbladder
Pancreas
Kidney

4. If you drink alcoholic beverages, limit consumption.

- Limit intake to no more than two drinks per day for men and one drink a day for women. A drink is defined as: twelve ounces of beer, five ounces of wine, or one-and-a-half ounces of eighty-proof distilled spirits;
- Remember that alcohol is an established cause of the following cancers:

Breast
Esophagus
Larynx
Liver
Mouth
Pharynx

NORTH CAROLINA AMERICAN CANCER SOCIETY ADMINISTRATIVE RESOURCE CENTERS

Asheville Administrative Resource Center

120 Executive Park, Building 1
Asheville, NC 28801
Phone: (800) 282-4914
Fax: (828) 252-8890

Greenville Administrative Resource Center

930-B Wellness Drive
Greenville, NC 27834
Phone: (800) 282-4914
Fax: (252) 695-0671

Metrolina Region Administrative Resource Center

500 East Morehead Street, Suite 211
Charlotte, NC 28202
Phone: (800) 282-4914
Fax: (704) 376-0516

Raleigh Administrative Resource Center

11 South Boylan, Suite 221
Raleigh, NC 27603
Phone: (800) 282-4914
Fax: (919) 839-0551

Triad Administrative Resource Center

4-A Oak Branch Drive
Greensboro, NC 27407
Phone: (800) 282-4914
Fax: (336) 834-8777

Wilmington Administrative Resource Center

3131 Wrightsville Avenue
Wilmington, NC 28403
Phone: (800) 282-4914
Fax: (910) 763-1936

CANCER CENTERS

MEDICAL SCHOOLS

North Carolinians are truly fortunate to have so many excellent cancer treatment and research facilities within the state. North Carolina is home to three of the 39 National Cancer Institute (NCI)-designated Comprehensive Cancer Centers in the nation. The Cancer Centers Program of the NCI supports major academic and research institutions throughout the United States to sustain broad-based, coordinated, interdisciplinary programs in cancer research. The NCI, along with the Cancer Centers Program, is dedicated to the advancement of cancer research to ultimately impact the reduction of cancer incidence, morbidity, and mortality.

To receive NCI recognition, eligible facilities must first secure an NCI peer-reviewed Cancer Center Support Grant. Three types of cancer centers designations (generic, clinical, and comprehensive) are awarded based on the degree of specialization of their research activities. In addition to providing superior clinical care and services for cancer patients, comprehensive (the highest distinction) cancer centers integrate strong basic science, strong clinical science, and population science with prevention control. The NCI-designated Comprehensive Cancer Centers are national leaders in cancer treatment, research, and education. These facilities participate in both basic and clinical research and hold cancer conferences.

Duke Comprehensive Cancer Center

The National Cancer Act allowed Congress to provide federal funds to build 15 cancer centers in the U.S.; in December 1971, one of the nation's first cancer centers was established at Duke University. In 1973, NCI designated the Cancer Center at Duke as a "comprehensive" cancer facility. Duke Comprehensive Cancer Center is recognized nationally and internationally for its excellence in research and for contributions in the areas of clinical trials, prevention and control efforts, information and educational offerings, and outreach and service activities. In 2002, Duke University Hospital admitted more than 7,600 patients for inpatient cancer care, 30% of whom came from other states. Outpatient visits for cancer care total more than 120,000 annually. Cancer patients receive psychological and educational support in coping with their illnesses from cancer patient support programs, staff and volunteers of Duke University Medical Center.

Duke Comprehensive Cancer Center is affiliated with the National Comprehensive Cancer Network (NCCN), an alliance of 19 of the world's leading cancer centers. The primary initiative of the NCCN is the development and dissemination of the NCCN Practice Guidelines in Oncology. The NCCN Practice Guidelines are the most widely used guidelines in oncology practice. They are presently available for approximately 90% of all cancers and address critical supportive care issues. These guidelines are developed from evidenced-based data and clinical experience.

Housed at the Duke Comprehensive Cancer Center is the Cancer Information Service (CIS) of the Southeast Region. CIS is an NCI Program and is the source for the latest and most accurate cancer information for patients and their families, the public, and health professionals. Operations began in 1976, initially serving only North Carolina. Currently, this regional office serves North Carolina, South Carolina, and Georgia. For more information about CIS call 1-800-4-CANCER or visit their website at http://www.cancer.duke.edu/cis.

Adults receiving a variety of outpatient treatments on a daily basis at Duke Comprehensive Center may reside at the Caring House. Guests of the Caring House are referred by Cancer Center oncology social workers and must be accompanied by a caregiver if deemed necessary. A $25 donation for each night stayed is suggested, but not required. For reservations, call Oncology Social Work at Duke Comprehensive Cancer Center at (919) 681-5373. More information about the Caring House can be obtained at http://www.caringhouse.com or by calling (919) 490-5449.

Duke Comprehensive Cancer Center
301 MSRB
DUMC Box 3843
Durham, NC 27710

(919) 684-3377
http://www.cancer.duke.edu

Duke Consultation and Referral Center
1-888-ASK-DUKE (toll free)
(919) 416-DUKE (local)

University of North Carolina Lineberger Comprehensive Cancer Center

The University of North Carolina at Chapel Hill Lineberger Comprehensive Cancer Center is a publicly assisted comprehensive cancer center for the state of North Carolina. The Center's mission is to reduce cancer occurrence and death in North Carolina and the nation through research, treatment, training, and outreach. To fulfill this mission, the Lineberger Comprehensive Cancer Center is involved in several research and cancer control programs focusing on cancers of the breast, skin, prostate, colon and rectum.

The Lineberger Cancer Center was established in 1975. Today, the center is recognized nationally as one of the top 15 institutions for its cancer research funding, and its training programs for scientists and physicians are among the finest in the country. NCI designated the Cancer Center as "comprehensive" and also gave it the distinction of being one of eight Specialized Programs of Research Excellence (SPORE) in breast cancer nationally.

UNC Lineberger Comprehensive Cancer Center
School of Medicine CB# 7295
University of North Carolina at Chapel Hill
Chapel Hill, NC 27599-7295
(919) 966-3036
http://cancer.med.unc.edu

Appointments
1-866-828-0270 (toll free)

Patient/Family Resource Center
(919) 966-3097

Comprehensive Cancer Center of Wake Forest University

The Comprehensive Cancer Center of Wake Forest University (CCCWFU) is carrying out innovative research in the basic sciences, cancer prevention and cancer control, in addition to implementing outreach and education strategies designed to inform the public of advances in cancer research.

In 1972, one year after the National Cancer Act, the NCI designated the Cancer Center of Wake Forest University a Specialized Clinical Cancer Research Center. The Cancer Center began developing regional networks to address the particular problems and needs of communities and special populations. This network of community oncologists, nurse oncologists, and primary care physicians has facilitated clinical and cancer control research locally, regionally and nationally. In 1989, a Cancer Control program was formally initiated, facilitated by the establishment of the Department of Public Heath Sciences. Also in 1989, community medical and radiation oncologists organized by the Cancer Center successfully competed for a community clinical oncology program (CCOP), which now ranks first nationally in CCOP accrual. With the further development of cancer control efforts, particularly focused in the Piedmont region of the Southeast, the Cancer Center received comprehensive status in 1990 from NCI.

CCCWFU Community Clinical Oncology Program Research Base was funded in June 1999 to serve as a research base for NCI funded CCOPs and non-CCOP aligned affiliates of the Cancer Center. Through this program, community physicians can participate in NCI-supported treatment and cancer control/prevention trials not available through other NCI-approved Cooperative Groups. These trials test new approaches towards the treatment, prevention and detection of cancer and outcomes.

Individuals who live far from the Cancer Center and are receiving outpatient treatment may qualify for the Friendship Place. The Friendship Place is a temporary housing program offered by the Comprehensive Cancer Center. Eligibility is based on physician referral and available space.

Comprehensive Cancer Center of Wake Forest University
Medical Center Boulevard
Winston Salem, NC 27157
http://www1.wfubmc.edu/cancer

Cancer Patient Support Program (CPSP)
(336) 716-7980

Health-On-Call
1-800-446-2255 (toll free)
(910) 716-2255 (local)

Leo W. Jenkins Cancer Center of University Health Systems of Eastern Carolina

The Leo W. Jenkins Cancer Center brings together the resources and medical expertise of Pitt County Memorial Hospital, the Brody School of Medicine at East Carolina University and the local medical community. Working as one, these entities provide a unified approach to treating cancer patients in eastern North Carolina. The Leo W. Jenkins Cancer Center treats patients undergoing treatment for any type of cancer or blood disease (e.g., sickle cell anemia or hemophilia).

The Jenkins Cancer Center supports basic science, clinical and epidemiological research in the causes and treatment of cancer, and sponsors educational programs for health professionals, patients, and the general public. A number of new programs (bone marrow transplantation, biotherapy and photodynamic therapy) have been added that give patients new options for treatment and new hope for recovery. The Center is also accredited as a teaching center comprehensive cancer program by the American College of Surgeons Commission (ACoS).

For over 20 years, the Cancer Center has worked with local health providers to develop community cancer clinics that provide quality care throughout the region. This community outreach effort began with doctors from the Center who spent hours traveling all over eastern North Carolina. Each week, staff members went out into the region, providing cancer services to community clinics. The outreach programs were so successful that Cancer Center doctors were asked to move permanently to these communities. Today, full-time medical school oncologists live and work in Beaufort, Onslow and Carteret counties, providing medical care in partnership with local hospitals and physicians. Edgecombe and Nash are the latest counties to have clinics added to their communities. At present, 12 hematology/oncology physicians respond to cancer patients in Greenville and throughout the region.

Leo W. Jenkins Cancer Center of University Health Systems of Eastern Carolina
Moye Boulevard
Greenville, NC 27858-4354
http://www.ecu.edu/ecuphysicians/cancercenter.htm

1-800-223-9328 (toll free)
(252) 847-7867 (local)

MEDICAL CENTERS

Another designation of excellence in cancer patient care is the accreditation awarded by the Commission on Cancer (COC) of the American College of Surgeons (ACoS). Since the 1930s, hospitals, treatment centers, and other facilities are approved according to standards set by the Committee on Approvals of the COC. These standards ensure that each approved program provides patients with a full range of diagnostic, treatment, and supportive services either on-site at the facility or by referral. The COC encourages approved programs to improve their quality of patient care by implementing multidisciplinary cancer programs that cover the following issues:

- prevention
- early diagnosis
- optimal treatment
- rehabilitation
- psychosocial support
- pretreatment evaluation
- staging
- end of life care
- surveillance for recurrent disease and multiple primary tumors

Each approved program must also have a hospital-based cancer registry and engage in a variety of medical education and committee activities. More than 1,400 cancer programs are accredited in the United States. Currently, 82% percent of newly diagnosed patients with cancer are treated in programs accredited by the COC. Thirty-four North Carolina hospitals are approved by the COC. The North Carolina Central Cancer Registry congratulates the hospitals and medical centers that have earned COC accreditation for their cancer programs.

COC Approved Cancer Programs and Accrediations

Community Hospital Cancer Programs

Caldwell Memorial Hospital, Lenoir
Cleveland Regional Medical Center, Shelby
Craven Regional Medical Center, New Bern
Grace Hospital, Morganton
Hugh Chatham Memorial Hospital, Elkin
Iredell Memorial Hospital, Statesville
Lenoir Memorial Hospital, Kinston
Margaret R. Pardee Memorial Hospital, Hendersonville
Morehead Memorial Hospital, Eden
Rutherford Hospital, Rutherfordton
Transylvania Community Hospital, Brevard
Valdese General Hospital, Valdese

Community Hospital Comprehensive Cancer Programs

Alamance Regional Medical Center, Burlington
Cape Fear Valley Health System, Fayetteville
Catawba Valley Memorial Hospital, Hickory
FirstHealth Moore Regional Hospital, Pinehurst
Gaston Memorial Hospital, Gastonia
High Point Regional Health System, High Point
Medical Park Hospital, Winston-Salem
Northeast Medical Center, Concord
Mission St. Joseph's Hospital, Asheville
Moses Cone Health System, Greensboro
Nash Health Care Systems, Rocky Mount
Presbyterian Hospital, Charlotte
Rex Healthcare, Raleigh
Watauga Medical Center, Boone
Wayne Memorial Hospital, Goldsboro

National Cancer Institute-Designated Comprehensive Cancer Programs

Duke University Hospital, Durham
University of North Carolina Hospitals, Chapel Hill
Wake Forest University Baptist Medical Center, Winston-Salem

Teaching Hospital Cancer Programs

Carolinas Medical Center, Charlotte
Forsyth Medical Center, Winston-Salem
New Hanover Health Network, Wilmington
Pitt County Memorial Hospital, Greenville

1.800.ACS.2345
www.cancer.org

Hope.Progress.Answers.®